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EXPLORING THE ASSOCIATION BETWEEN APPROACHES TO STUDYING AND COURSE PERCEPTIONS USING THE LANCASTER INVENTORY - A REPLICATIVE STUDY AT THE CAPE TECHNIKON

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EXPLORING THE ASSOCIATION BETWEEN APPROACHES TO STUDYING AND COURSE PERCEPTIONS USING THE LANCASTER INVENTORY - A REPLICATIVE STUDY AT THE CAPE TECHNIKON

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ABSTRACT

The aim of this thesis research was to replicate the important work conducted by Noel Entwistle and Paul Ramsden, published in 1983, which sought to establish the relationship between perceived contextual factors and students' approaches to studying.

The two instruments that they developed for this purpose, the Approaches to Studying Inventory (ASI) and the Course Perceptions Questionnaire (CPQ), were administered to 1194 English-speaking and 590 Afrikaans-speaking students in 12 disciplinary areas at the Cape Technikon. Alpha factor analysis of the 24 summated sub-scales of the two inventories was conducted separately for the two samples.

When these were compared with the factor structure obtained in the Lancaster research programme certain differences were evident. Although the two main study orientation, **meaning orientation** and **reproducing orientation**, were present in slightly modified forms, there were no empirical associations between these two orientations and the contextual factors as measured by the sub-scales of the CPQ.

In order to explore the differences between the factor structures of the Lancaster programme and the two Technikon samples, the conceptual assumptions regarding the first order factor structure of the two instruments were relaxed. Firstly the 103 items of both instruments together were subjected to alpha factor analysis and subsequently the 63 variables of the ASI and the 40 variables of the CPQ were subjected to separate alpha factor analysis.

These analyses confirmed the integrity of the majority of the sub-scales of the ASI while calling into question the composition and indeed the conceptual validity of the sub-scale **surface approach**. The factor analysis of the CPQ variables confirmed the sub-scale groupings, but the analysis of the 103 variables failed to demonstrate any empirical association between the two instruments.

The replicative study concludes that the CPQ is of no value in terms of explaining students' approaches to studying. The ASI, however, appears to be a useful instrument which produces conceptually meaningful results for different population samples with respect to the two main study orientations. Areas which warrant investigation for the refinement of the ASI were identified and alternative methodologies to explore perceived contextual factors in conjunction with the ASI are suggested.

DECLARATION

I declare that this dissertation is my own, unaided work. It is being submitted for the degree of Master of Education in the Faculty of Education of the University of Cape Town. It has not been submitted before for any degree or examination in any other university.

Phillip Parsons

March 1988

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PREFACE

In a research dissertation which does not purport to have uncovered new knowledge, and which does not have as a primary aim the extension of knowledge in the field under investigation, it is legitimate to question the reason for, and the ultimate value of, the research project being reported.

This preface attempts to answer the question in a manner which will place the research project in sufficient perspective for its value to become evident. A fuller treatment of the rationale for and the background to this study is given in Chapters 1 and 2.

In 1983 Understanding Human Learning, by Noel Entwistle and Paul Ramsden was published and soon attracted considerable interest from those engaged in the area of teaching development in higher education. The reason for this interest was that, for the first time, using a new research perspective, the authors were proposing that the findings of their major 5 year research programme (funded by the Social Science Research Council) at the University of Lancaster could be used to act significantly upon the processes of teaching and learning in higher education.

Obviously any insight which helps us to understand the complex learning processes operating in higher education and which links these processes to aspects of the educational and institutional context, offers exciting possibilities if the validity of the relationships proposed can be shown to be true for other student populations in other similar institutional settings. Herein lies the danger: the results from the original study look so promising that educational practitioners are tempted to apply the findings to their situation as if they were proven to be valid and then to act on the basis of these results.

That research of this nature has value is attested to by the number of research projects reported that have been undertaken subsequent to the publication of Understanding Human Learning, using the inventories developed by Entwistle and Ramsden (see: Watkins, 1983; Ramsden, 1983; Watkins, 1984; Thomas & Bain, 1984; Entwistle & Kozeki, 1985; Watkins & Hattie, 1985; Ramsden et al, 1986; Clarke, 1986; Watkins et al, 1986.)

The author, who heads the Teaching Development Unit at the Cape Technikon, and his colleagues at the University of Cape Town Teaching Methods Unit, notably Professor J H F Meyer, were enthusiastic about the new insights this perspective had provided, but were wary about transferring the findings

across cultural and even linguistic boundaries without first confirming their validity.

The research programme that Entwistle and Ramsden reported did not lend itself to being repeated in its entirety. In essence, the research programme involved extensive interviews in which students were asked to describe their perceived approaches to studying and the effects of their perception of context on this approach. These interviews were used as a source for items to be used in inventories and questionnaires which dealt with **how students approach studying** and **how they viewed the context** within which their studying took place. The results from these quite separate pilot inventories were subjected to sophisticated multivariate statistical analysis in order to refine them, and the measures of association which subsequently emerged between the two sets of "approaches to studying" and "context" variables were simultaneously reassessed in the light of the interview data (Entwistle & Ramsden, 1983, 29-31).

The final stage of the programme involved the administration of revised inventories, the Lancaster Approaches to Studying Inventory and the Course Perceptions Questionnaire to 2208 students at 66 universities and polytechnics throughout Britain. (The methodology of the research programme will be outlined in greater detail in chapter 2.)

The scope and the nature of the interviews were such that they could not be repeated for this research project. Nevertheless, it was felt that repeating the statistical analysis of the results obtained from an administration of the two inventories to a large student sample at the Cape Technikon would confirm the construct validity of the instrumentation, and therefore legitimise its use as a stable measure. Furthermore, it might shed further light on the relationships between the perceived context as measured by the Course Perceptions Inventory and the students' approaches to studying, as measured by the Approaches to Studying Inventory.

In summary then, this research project attempts to follow, as closely as is practically possible, the statistical analysis conducted in the original programme on the inventory results in an attempt to confirm the conclusions involved. This will allow us to extend the application of the original findings to a new setting and further contribute to our understanding of the complex interrelationships that exist within the context of higher education.

This research project would not have been possible without the guidance and support of a number of individuals, to whom I would like to express my appreciation:

* Professor J H F Meyer for his encouraging and motivating supervision,

* Professor A Money and Dr R Sparks for their advice on the statistical analyses,

* Mr D Cook and Mr D Chaleton for their willing assistance with the processing of the statistical data,

* My colleague, Mrs M Welgemoed, without whose support and encouragement this project could never have been completed, and

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CHAPTER ONE - THE VALUE OF REPLICATION IN EDUCATIONAL RESEARCH

REPLICATION AS PART OF SCIENTIFIC ENQUIRY

Scientific enquiry in all disciplines has been primarily concerned with the discovery of new knowledge and the systematisation of this knowledge. A long research tradition has equated research with "discovery" and has given little prominence or status to confirmatory studies. This is possibly understandable in the natural sciences where repeat experiments are invariably a part of the experimental design. Gloyle, et al, (1957) points out, however, that "in our insistence on the importance of 'original' work we have slighted the vital function performed by constant rechecks".

What is true of other disciplines is also true of educational research. Bauernfeind (1968) could find replication listed in the index of only one of the ten textbooks on educational research that he consulted. [Replication is preferred to repeatability by behavioural scientists since no experiment in the behavioural sciences can be repeated exactly.] His statement on the place of replication in educational research is most illuminating: "The principle of replication was largely ignored in

educational research until around 1950, and even today it is not viewed as a major criterion of quality research." (Bauernfeind, 1968) The growing place of replication in educational research is possibly reflected by Thompson (undated) who cites six authors in the field of behavioural research writing between 1957 and 1972 who advocate the replication of prior investigations.

In the field of the natural sciences the repeatability of an experiment is almost always included in the experimental design. Traditionally, too, experiments are repeated using refined experimental designs in order to reduce the level of error that might be present. (For example, experiments to determine the value of the gravitational constant have been repeated hundreds of times.) Given the controlled laboratory conditions under which many such experiments are conducted, this is relatively simple to do. No natural scientist would publish his findings, let alone act upon these results, until he had demonstrated that these findings could be reproduced under the same or essentially similar conditions. Implicit, therefore, in the publication of such findings is the challenge to other researchers to reproduce these findings.

Natural scientists recognise that no conclusions can validly be drawn on the basis of a single study alone. Shulman, quoting Tukey, the famous mathematician, asserts that

scientific truth is based on the repetition of significant results. Not only does repetition help to reduce errors which might have affected the original experiment, it also allows us to judge the confidence and significance of the results obtained. (Shulman, 1970)

It is unfortunate that a similar research methodology has not developed in the behavioural sciences, although it is easy to see why experimental design has failed to include repeat experiments. However, replicating the experiment under conditions as nearly similar to those of the original should be considered an important part of the verification of any research findings in the behavioural sciences.

All too often behavioural scientists accept the results of a single experiment and proceed to change the variables involved in the original design in an attempt to extend knowledge in that particular area when their first concern should be to verify the results obtained in the original experiment. Shulman (1970) states it unequivocally in the following terms: "Whatever the findings, replicate them. Make replication as integral a part of the research design as posttesting or data analysis."

REPLICATION TO REDUCE RESEARCH ERRORS

Replication is particularly vital in the light of the fact that research in behavioural science, by its very nature, is more prone to error than research in the natural sciences. Bauernfeind (1968) points out four major types of errors that can occur.

Type A - Administrative errors

In many research designs it is possible for errors in administration to occur, unbeknown to the researcher, which may produce biased samples, unrepresentative samples or which may introduce variables into the experiment which the design was not intended to accommodate. Replications would help researchers to identify and correct such errors.

Type C - Computational errors

Simple errors in arithmetic may occur in any study. This is particularly true in studies involving large samples and ones which utilise computer-based statistical packages which are dependent on the accuracy of the source data.

Type S - Sampling errors

When samples of a population are used in a research study (for example, second year students at a particular university) then inferential statistics have to be applied

if we wish to deduce anything that is not restricted to that given population. If, in the example given, we wish to infer on the basis of the second year student population something about all the students at that particular university we should ascertain how representative the second year sample is of all the university students. When dealing with large populations which may have varying characteristics not present in the original sample replicative studies are of great value in determining the level of confidence with which the original findings can be applied to the desired population.

Type P – Population errors

Even if an entire population is studied (in our example, all students at a particular university) we cannot infer that the findings will hold true for another population (students at another university). Thus the general applicability of the findings is restricted unless either we infer from other studies of the two given populations that they are similar for the purposes of applying the findings of our study, or we replicate the original study on the new population. The more replicative studies that are conducted the greater our level of confidence becomes in defining the populations for which the findings can be generalised.

REPLICATION TO EXTEND OR MODIFY ORIGINAL RESEARCH

The primary value of replicative studies, as outlined in the previous section, is to confirm the findings, or improve the accuracy of an original research study and to broaden the base for the generalisability of these original findings. In many areas of educational research this value extends no further since we are dealing with experimental conditions of a bivariate nature (example: recall with five minute as opposed to ten minute review) in which our concern is with the extent to which a given proposition is or is not true for a given population in a given situation, and to what extent this finding can be generalised.

However, when we move from bivariate studies to multivariate studies the value of replication is greatly extended. Multivariate studies are an attempt to explain certain observed phenomena in a way which takes into account the effects of a variety of variables acting simultaneously on the experimental condition and attempts to group these variables conceptually and empirically in a way which best explains the observed phenomena.

Because of the increased complexity of multivariate studies the need for replication is even more evident. To the research errors outlined by Bauernfeind (1968), earlier cited , may be added the problem of **conceptual bias** in the interpretation of multivariate results. Since, by their nature, multivariate studies will yield results which are capable of being interpreted in different ways with differing levels of validity and statistical confidence, it is more likely that the conceptual bias of the researcher will impose itself on the interpretation of the results.

Replicative studies in the field of multivariate research therefore take on an added dimension in that they may not only confirm the validity of the original study, they may also modify or extend the interpretation of the results depending on the level of similarity obtained in the two studies. Shulman (1970) points out that "crossvalidation for new populations and settings may confirm the validity of measures that had been held suspect". Thus replication may serve to establish findings that were inconclusive in the original study.

Thompson (undated) states another benefit of replicative studies. "The search for reasons why the findings from replicative studies differ can also provide a rich learning experience for the investigator." Not only may the

replicative study confirm the findings of the original study, it may re-interpret them in the light of the replication in such a way as to modify the original interpretation or even to extend it. The more complex the nature of the original research in terms of the number and the nature of the variables involved, the greater the possibility that a replicative study may produce such an extension to, or a modification of the original findings.

THE NEED FOR REPLICATIVE STUDIES IN THE FIELD OF HUMAN LEARNING

The field of human learning, particularly in higher education, is one which presents the researcher with perhaps the most intricate of all sets of relationships. Not only is the field conceptually complex, it is also relatively unresearched. Certainly, prior to 1972 one would be hard pressed to find research results which related to learning as experienced by the student (Entwistle & Ramsden, 1983 p.2). Since 1976, the seminal work of Marton and Säljö (1976a; 1976b) and Pask (1976) has contributed to a new research perspective into student learning in higher education which has developed rapidly. Yet the body of research knowledge that we now possess is comparatively small and the conclusions tentative.

The need to replicate this research in order to establish both its validity and its generalisability is patently evident. To generalise about educational systems and to operate on them on the basis of a few studies with tentative conclusions could be to undo much of the good that has been achieved by this new perspective on student learning.

It is this new phenomenographical research perspective, too, that has made replicative studies not only necessary but also attractive. (The precise nature of phenomenography and its influence on research methodology will be discussed in detail in chapter 2.) In addition, the often complex multivariate and other analytic procedures that are often employed to verify the conclusions are of such a nature that they need replicative studies to confirm the validity of the interpretation.

Similarly, if we wish to extend this interpretation beyond the original studies we must replicate them in different situations (Bauernfeind, 1968). Researchers in the field of human learning make the same point as to the value of replicative studies (Laurillard,1979; Hattie & Watkins, 1981; Watkins & Hattie, 1981; Watkins, 1984; Thomas & Bain, 1984; Watkins et al, 1986).

In the area of human learning that is the particular concern of this dissertation, namely the approaches to studying adopted by students in higher education and the effects of the learning context on these approaches, as defined conceptually by the research of Entwistle and Ramsden (1983), replicative studies have yielded valuable results which have modified and extended the conceptual framework originally posited. In chapter 5 we will compare the findings obtained in the current study with those obtained

in similar replicative studies conducted elsewhere. In particular these studies will assist us in providing "empirically verifiable, quantitative estimates of the strength of relationships between different aspects of the study process complex" (Watkins & Hattie, 1981). In addition, we should be assisted in our attempts to generalise from one institution to another (ibid) as well as in our search for cross-cultural validity (Watkins, 1984; Entwistle & Kozeki, 1985).

AIMS OF THE RESEARCH PROJECT

Because of the potential benefit of replication in educational research and the particular value that attaches to it in the field of student learning in higher education, the research project undertaken by the author from 1984 to 1987 concentrated on replicating the definitive research of Entwistle and Ramsden (1983) as far as was practicable given the nature and the scope of the research project.

The research methodology adopted, which will be discussed fully in chapter 3, developed out of the aims of the replication, which were:

- to replicate as closely as possible the statistical procedures employed by Entwistle and Ramsden in the analysis of the results of their study(1983), using a population sample at the Cape Technikon. On the basis of this replication it was hypothesised that the original research findings would be extended or limited in terms of their general applicability.

- to use the replicative findings to attempt to confirm, modify or extend the relationships already posited in the original research between the Lancaster Approaches to Studying Inventory and the Course Perceptions Inventory.

Given the unique division into two language populations (namely, English and Afrikaans speaking students who, while attending the Technikon, are given tuition predominantly in their home language) as well as the characteristic nature of the institution itself, it was hoped that these variations would provide a valuable insight into the relationships between students' approaches to learning and the learning context.

- to see whether any differences in the results obtained between the the present study and the original research study (if such differences indeed exist) are grounds for questioning the methodology adopted and/or the conclusions drawn.

- to see whether areas which warrant further research could be identified.

It should be clear from the above aims that the purpose of the research project was to establish the conceptual validity of the Inventories in the cultural and institutional situation chosen, and to evaluate their usefulness as instruments which could be used strategically toward improving the quality of education provided at the Cape Technikon.

It is not enough to use an inventory to obtain useful information about student learning at an institution of higher education. First, it is necessary to establish the stability of the conceptual constructs which underly the inventory for the institution in question, if this institution differs in any major respect from the institutions which comprised the original studies. This point is well made by Hattie and Watkins (1981), when commenting on the results of studies using Biggs' Study Process Questionnaire in the Philippines and in Australia.

> "The writers consider that further research is required with a wider range of Filipino and Australian students before it is possible to determine if the results of this study are a reflection of true linguistic, educational or personological differences between students of these countries or are simply attributable to sampling error. It is certainly true that earlier research has indicated that major differences exist between Filipino and both Australian and US university students'views of the aims and methods of tertiary education (Watkins and Malimas, 1980). However, of course, such findings do not necessarily indicate that the same measuring instruments are not valid in these countries. ... Additional evidence is thus required to investigate to what extent the SPQ is country bound and also to provide support for the validity of the SPQ as a measure of study methods."

The author would strongly support the stance taken by these writers and feels that a caveat should be issued to those who would use instruments developed to describe and categorise student learning in higher education as the basis for intervening in the educational programme. It may be

that the results obtained are meaningful, but whether the combinations and/or causal relationships that were developed on the basis of the original studies are directly transferrable is open to question until replicative studies have shown them to be. The attractiveness of the instrument and/or the conceptual framework as well as the results obtained must not blind the educational practitioner to the necessity of following sound research methodology.

It is to address this area that this research project is directed in the hope that it will extend our knowledge about the usefulness of the 'Lancaster' Approaches to Studying Inventory and the Course Perceptions Inventory.

CHAPTER TWO - THE BACKGROUND TO THE LANCASTER APPROACHES TO STUDYING INVENTORY AND THE COURSE PERCEPTIONS QUESTIONNAIRE

TRADITIONAL RESEARCH INTO STUDENT LEARNING IN HIGHER EDUCATION - AN HISTORICAL PERSPECTIVE

In most traditional educational research, learning has been viewed as a quantitatively measurable outcome (Marton & Säljö, 1976b). Few, if any, studies examined the real (as opposed to attributed) processes of learning that students engage in when faced with a realistic learning task in the natural context of higher education (Laurillard, 1979a). Psychology, particularly behavioural psychology, had taken education into the laboratory in order to examine the relationships between various dependent variables and had tried to devise theories (based on the experimental results) which would in turn hold true when taken back to natural educational settings. Shulman (1970) is surely correct when he says:

> "...does it not seem presumptuous to expect that a learning theory based upon the evidence from the T-maze, the pigeon's press bar or the memory drum can effectively be used to guide the planning of that most complex of human endeavours, the typical classroom?" (p 377)

The failure of the experiment-based, quantitative approach was evident to many educators (though not to all researchers in the field of educational psychology). Shulman (ibid) is scathing in his verdict on the value of the traditional approach:

> "If the object of such research is the development of coherent and workable theories, researchers are nearly as far from that goal today as they are from controlling the weather. If the goal of educational research is significant improvement in the daily functioning of educational programs, I know of little evidence that researchers have made discernible strides in that direction. Which way do they turn? To more of the same? Or to a pragmatic attack on highly specific educational problems, eschewing theory development as a goal? Or do they reexamine the basic paradigms and parameters of both education and research in order to seek new directions? ... neither a slavish continuation of current practices nor a monolithic rejection of them is likely to solve the problems of educational research. Researchers must step back, regain perspective and then identify clearly the most fruitful routes toward development of an empirically based discipline of education." (p 371 - 372)

While not being in a position to give a new positive direction, he does at least hint at an alternative perspective:

> "Because educational programmes are far more complex than the present psychological theories which purport to explain the teaching-learning process, it might be in the long range interest of both psychological theory and education to ignore these theories for the moment and proceed along a relatively atheoretical path in the study of education." (ibid p 383)

It took the novel approach of Marton and Säljö to chart this alternative perspective. In order to fully understand the work of later researchers such as Entwistle, Ramsden, Biggs, Watkins, and Hattie we need to look closely at the research perspective advocated by Marton and Säljö as well as the results of their research, which were published in 1976.

AN ALTERNATIVE RESEARCH PERSPECTIVE: PHENOMENOGRAPHY

In contrast to, and often at variance with, traditional quantitative research perspectives there are those perspectives which derive from a phenomenological view of research. These attempt to describe the world as we see it and experience it. Thus we look at the learner and describe him and his world as we observe and interpret it (Marton & Svensson, 1979). We attempt to describe reality from our perspective - what Marton (1981) calls a **first-order perspective.**

This tradition has developed and currently enjoys widespread popularity in naturalistic research (ethnographies, case studies) and practical research (action research) (Tripp, 1985). It suffers from the legitimate criticism that the descriptions that are generated are from the **perspective of the observer** (the teacher, the anthropologist, the educational researcher) and are therefore constrained by his view of the situation under observation.

As a complementary extension to this perspective Marton and his colleagues proposed a perspective that he termed **second-order** (Marton, 1981). This perspective was not concerned so much with attempting to describe experiential reality from without, as with understanding the perceptions of the

learner of that reality, that is from the perspective of that which is being observed (the learner) rather than from the observer. The object is "to find out the different ways in which people experience, interpret, understand, apprehend, perceive or conceptualize various aspects of reality"(ibid).

In arguing for the value of this perspective, Marton (ibid) says that "the descriptions we arrive at from the second-order perspective are autonomous in the sense that they cannot be derived from descriptions arrived at from the first-order perspective". Herein lies the attraction of this perspective, to which Marton (ibid) attached the term "**phenomenography**" - it reveals perceptions of reality that are inaccessible from the perspective of first-order research.

Marton (ibid), in arguing for the distinctiveness of this field of enquiry, identified four features which underpin the phenomenographic perspective.

1. As distinct from phenomenology, in which what is observed as being experienced cannot be separated from the experience per se, phenomenography describes what is experienced as distinct from the experience itself,

thus enabling the researcher to find and systematise the ways in which different people experience the same reality. What is important to remember, however, in the context of educational research, is that this attempt to systematise is based on a second-order perspective, ie. the perspective of the individuals, not of the researcher.

2. Phenomenography argues, on the basis of research experience, that "aspects of reality are experienced (or conceptualised) in a relatively limited number of qualitatively different ways"(ibid). This aspect, in the context of education, gives rise to the term "**outcome space**" (Marton & Säljö, 1976a) within which individuals' perceptions regarding a particular aspect can be categorised on the basis of their own perceptions. (**Outcome space** is the term applied to the complete range of responses obtained to a specific question relating to a particular area of content. It is determined after careful analysis of a large number of responses and cannot, therefore, be determined a priori by the researcher.)

3. Phenomenography is substance-orientated. It is concerned with describing and understanding people's perceptions, experiences and conceptions of specific aspects of reality; it is not concerned with theoretical abstractions.

4. Phenomenography does not try to divorce what is conceived and experienced as reality from what is perceived about that reality. Its departure point is the full range of perceptions about experiences and conceptions even when these are dependent on context, environment or culture (Gibbs, 1982).

In putting forward the aim of phenomenographic research Marton stated that it is "not, however, to classify people, nor is it to compare groups, to explain, to predict, nor to make fair of unfair judgements of people. It is to find and systematize forms of thought in terms of which people interpret aspects of reality which are socially significant and which are at least supposed to be shared by the members of a particular kind of society " (Marton, 1981).

In realising this aim, Marton proposed that " this focussing on conceptions of specific aspects of reality, i.e. on apprehended (perceived, conceptualized or 'lived') contents

of thought or experience, as a point of departure for carrying out research, and as a base for integrating the findings, is in fact the most distinctive feature of the domain labelled 'phenomenography'" (ibid).

This background to the research perspective adopted by Marton and his colleagues helps us to understand the position and value of their findings published in 1975 and 1976.

ON QUALITATIVE DIFFERENCES IN LEARNING (MARTON & SÄLJÖ, 1976A; 1976B)

In their first paper published in 1976, entitled. On qualitative differences in learning: I - outcome and process Marton and Säljö reported the results of an investigation into the processes adopted by Swedish university students when asked to read substantial (1400 word) passages of prose. Their concern was with the qualitative aspects of the students' understanding of what they had read. For this purpose each student in the experimental group was interviewed, the interview was recorded and later transcribed for detailed analysis. The interviews consisted of structured open questions aimed at eliciting from the students how they had tackled the process of reading and also at assessing what (not how much) had been understood.

By carefully analysing the students' responses to questions concerning their understanding of the article, it was possible to define the outcome space for that particular area of content and to place all the students into qualitatively different levels in terms of the quality of their understanding (as distinct from how much they had understood). This investigation clearly showed qualitative differences in the learning outcomes of students engaged in a task fairly representative of the intellectual activity required in higher education.

The next step was to investigate whether the students adopted different processes in order to arrive at the different outcomes. A similar analysis produced evidence of two basically different levels of processing which were designated as **deep-level** and **surface-level processing.** In the case of **surface-level processing** students concentrated on learning the text itself (*the sign*) with a view to reproducing it (akin to a rote-learning strategy). In the case of **deep-level processing** students concentrated on the intention of the writer (*what is signified*) with a view to achieving understanding. Two examples illustrate the different processes employed.

surface-level processing

"Well, I just concentrate on trying to remember as much as possible."

deep-level processing

"...I tried to look for ... you know, the principal ideas"

(Marton & Säljö, 1976a)

The association between the level of outcome and the level of processing is shown in Table 1. It is clear from this Table that the highest qualitative level of understanding is only attainable by students adopting deep-level processing and that surface-level processing will lead exclusively to lower qualitative levels of understanding.

TABLE 1

Relationship between level of outcome and level of processing (number of students n=30)

Level of Outcome	Level of Processing			Sub-Tot.
	Surface-level	Not clear	Deep-level	
understanding				
A more			5	5
B	1	6	4	11
C	8			8
D less	5	1		6
Sub-totals	14	7	9	30

Deep-level includes one subject showing indications of both levels.

(Marton & Säljö, 1976a)

The publication of their second paper, On qualitative differences in learning - II Outcome as a function of the learner's conception of the task further investigated the processes students adopted, to establish whether these were directly influenced by the anticipated demands for recall. Students were given three fairly long passages (2113, 3850 and 3279 words respectively) and told to be prepared to answer questions on the content after reading each of them. The only clues the subjects were given as to how to approach this learning task were the questions they received after the first two passages.

One group (20 students) was given questions aimed at inducing surface-level processing (example: *According to the author the shortage of teachers depends on three factors. Which three?*) while the other group (20 students) was given questions aimed at inducing deep-level processing (example: *Could you explain the meaning of the following quotation: "... too many poor teachers will drive good ones out of the market"?*) (Marton & Säljö, 1976b). At the end of the third passage students were asked questions which were aimed at reflecting qualitative differences in learning outcome as well as measuring the approach they had taken to the task. By means of semi-structured interviews the effect of the experimental manipulation on the level of processing adopted was explored.

The authors summarised their findings in these terms:

> "...the between-group differences point to the clear modifiability and context dependence of a person's conception of learning. In other words, learning seems to be defined differently depending on, for instance, anticipated task demands." (ibid)

> "If the type of learning depends (as it does here) upon the type of evaluation anticipated, what is learned will undoubtedly reflect what is seen to be appropriate for that particular purpose, although by other criteria it would be considered very poor." (ibid)

> "Students adopt an approach determined by their expectations of what is required of them. While many students are apparently capable of using "deep" or "surface" strategies, it may be that the demands of the examination system at school level are interpreted by them as requiring mainly the recall of factual information to the detriment of a deeper level of understanding." (ibid)

The association between anticipated demands for recall and level of processing was fairly clear-cut for the surface-level group. Surface-level processing was indeed induced when the questions were so set that students anticipated an outcome range that favoured that level of processing. However, the deep-level group divided into two sub-groups: those who indeed adopted deep-level processes in anticipation of an outcome range requiring this level of processing, and a group of students who focussed on the explicit demands of the questions and who adopted processes aimed at fulfilling these demands alone. (In the experiment the questions aimed at inducing deep-level processing could be answered by focusing on the technique of answering the question anticipated rather than on acquiring an understanding of the article which would allow them to answer any question set. The specific questions which these students anticipated required the recall of the text and the ability to summarize the main ideas.) This group of students 'technified' their learning in order to meet the demand they anticipated.

Here was evidence from a new research perspective which supported the link between contextual factors as perceived by the student (the demands for recall) and the approach to studying which the student adopted. This, taken together with the evidence that students could adopt either deep or surface level strategies, opened up an area for further research within the phenomenological perspective.

STYLES AND STRATEGIES OF LEARNING (PASK, 1976)

At the same symposium at which Marton and Säljö delivered their second paper, Gordon Pask reported the results of a series of experiments conducted into the strategies adopted by students when undertaking learning tasks, initially in a laboratory setting, and later also in an educational institution.

Pask's perspective was traditional, but the methods that he employed showed interesting variations. His method was to use conversational techniques involving either a human participant in dialogue with the student, or in some cases a computer "participant", in order to explore the strategy that students adopted in order to 'understand' a topic - a concept which Pask saw as similar to Marton and Säljö's deep-level processing (Pask, 1976). The method forced students to adopt mutually exclusive strategies, termed holist and serialist (ibid).

A holist strategy is characterised by an assimilation of information from many topics, by the ability to generate global descriptions and to deal with broad relationships and formulate generalised hypotheses.

A serialist strategy is characterised by a progressive movement from one topic to another only when the original topic has been understood, a concentration on the aspect of the topic being considered and the formulation of narrow relationships and specific hypotheses.

Pask drew the clear distinction between general learning styles and learning strategies. Strategies were adopted by students in response to the demands of a particular situation induced by the method of the experiment. He said that **holism** and **serialism** were extreme manifestations of more fundamental processes, and that for normal learning tasks in higher education some students are disposed to act 'like holists' (**comprehension learners**) and others 'like serialists' (**operation learners**). Other students could employ <u>either</u> strategy successfully, depending on the subject matter. This group he referred to as **versatile learners.** Students who <u>consistently</u> adopted these strategies may be said to be exhibiting a particular learning <u>style</u> (ibid). In other words, in terms of Pask's work it is possible to identify three <u>styles</u>, namely **comprehension learning, operation learning,** and **versatile learning.**

In summarising his conclusions, Pask makes the following important observation:

> "Whereas holist and serialist strategies belong to distinct classes (because of the restrictions imposed by the apparatus), it is emphasised that the comprehension/operation learning distinction is a matter of *degree*. The point is important because it can be shown, on empirically supported theoretical grounds, that *both* description building and procedure building operations are prerequisites for understanding any topic." (Pask, 1976)

Associated with the three styles described above are two other categories which develop from them. These are two pathologies of learning, which, Pask suggests, are the result of the incomplete realisation of the two strategies of comprehension and operation learning. He designated these **globetrotting** and **improvidence**.

Globetrotting is defined as "the misunderstanding of valid analogies, the use of vacuous analogies or both": **improvidence** as "failure to use valid analogies, failure to use a common principle, or both" (ibid). Thus comprehension learners who are not versatile will exhibit globetrotting, and operation learners who are not versatile will exhibit improvidence.

COMBINING FIRST-ORDER AND SECOND-ORDER RESEARCH PERSPECTIVES

The problem that faced researchers was how to proceed with the new concepts provided by Marton and by Pask. Laurillard makes the point pertinently when she expresses the dilemma in these terms:

> "The literature on research in student learning does not provide many starting points for a study of learning in higher education. With a few exceptions the type of learning studied bears little relation to the kind of conceptual understanding that forms an important part of learning in higher education. A study based on students' actual academic work is needed to elucidate what it is that research on learning has to account for. But even an exploratory study of this type needs some starting point." (Laurillard, 1979a)

Two researchers who had been active in the field of student learning in higher education, albeit from a traditional, first-order, quantitative perspective, were John Biggs in Australia and Noel Entwistle at Lancaster University. Even Marton himself (Marton, 1981) acknowledged that the first-order and the second-order research perspectives could complement each other, and it was therefore logical that both these researchers (Biggs and Entwistle) should attempt to synthesize the new perspectives given by Marton and by Pask into aspects of their on-going research programmes.

John Biggs

Biggs had been interested in study processes and the development of a taxonomy of learning quality (Biggs, 1979). Following the work of Marton, he attempted to inter-relate these two areas. He employed a Study Process Questionnaire (SPQ) containing the ten sub-scales shown below.

Academic aspiration
Academic interest
Academic neuroticism
Internality
Study skills and organisation
Fact-rote strategy
Dependence
Meaning assimilation
Test Anxiety
Openness

(Entwistle & Ramsden, 1983 p 37)

Using this questionnaire he proposed three dimensions of study process, each of which had a component of motivation and strategy. These three dimensions (which were supported empirically by factor analysis of the questionnaire results) were defined as follows:

1. Utilising. The motivation associated with this dimension is extrinsic and pragmatic (typically, to get a better job) coupled with a desire to avoid failure. The strategy is characterised by avoidance of failure, but doing as little work as possible. The student becomes syllabus-bound, and concentrates on reproduction rather than understanding.

2. Internalising. The motivation for this dimension is instrinsic and the student sees his study at university as part of his process of self-actualisation. His strategy is to seek for meaning in all that he studies. He is consequently syllabus-free, attempting to inter-relate material into a meaningful conceptual framework.

3. Achieving. The student is motivated by competition and aims for high grades for their own sake. His strategy is to maximise the reward for the effort that he puts in. He is consequently well-organised and systematic in his approach to study. (Biggs, 1979)

Biggs links his work to that of Marton when he says that "surface-level learning is clearly similar to the cognitive component of utilising" and that "there are also clear parallels between deep-level processing and internalising" (ibid). This attempt to relate the ideas proceeding from the second-order perspective with those of a traditional perspective does little to integrate them; in fact Biggs admits that the study owes little more than "conceptual debts" to the phenomenographic tradition (ibid).

Biggs was attempting to develop a "parsimonious and theoretically coherent model for conceptualising the more important ways in which students may feel about, and behave

towards, their study"(ibid). In trying to assimilate the work of Marton into this he may have failed to preserve the complexity of the actual learning situation (Laurillard, 1979). Nevertheless, his initial work did support the robustness of the conceptual framework proposed by Marton and he also demonstrated its practical accommodation within a model which attempted to conceptualise how students in the context of higher education approach the task of studying.

Noel Entwistle

Entwistle had been busy with collaborative studies into study methods and motivation as predictors of academic performance since 1968. The inventories he had developed and the theoretically meaninful scales imbedded in them showed consistent but rather low correlations with academic performance. Their greatest weakness was "an over-simple description of study methods, through a failure to take account of the existence of very different approaches to studying used by students" (Entwistle, et al, 1979).

In 1975 he incorporated ideas from Marton, Pask, Ramsden and Biggs into his inventory. To the six original scales developed by Entwistle, namely

- organised study methods
- achievement motivation
- fear of failure
- disillusioned attitudes (later renamed: negative attitudes to studying)
- syllabus boundness
- sociability (subsequently dropped from the inventory)

were added the dimensions proposed by Marton and by Pask:

- deep level approach
- surface level approach
- comprehension learning
- operation learning

(ibid)

The items used in these scales were derived from earlier versions of his study methods and motivation inventory (Entwistle, et al, 1971), from Marton's descriptions of deep and surface processing and from Pask's indications of the varying learning strategies used by holists (comprehension learners) and by serialists (operation learners). Two other sources were Ramsden's (1979) modification of the ideas of Miller and Parlett (1974) on cue-consciousness to produce a dimension which explored a strategic approach to assessment, and his analysis of interviews with students which formed an on-going part of the research programme. All these ideas provided a pool of 120 items which was used in the pilot Approaches to Studying Inventory (Entwistle & Ramsden, 1983 p 36).

The items were subjected to **conceptual analysis** to ensure content validity and conceptual consistency and the results of the administration of the pilot inventory were subjected to **alpha factor analysis** followed by oblique rotation using SPSS software.

From this analysis a second pilot inventory was produced comprising fifteen sub-scales made up of 82 items from the first inventory and an additional 24 items rewritten from the four sub-scales developed by Biggs, (namely: intrinsic motivation, extrinsic motivation, internality and openness).

The second pilot inventory was administered to 767 first year students from nine departments at two universities. The results were subjected to principal component factor analysis, followed by oblique rotation.

The results that were obtained from this analysis are reproduced in Table 2 together with an additional column indicating the origin of the sub-scales.

TABLE 2

Factor Loadings of Study Strategy Scales

ORIGIN	SUB-SCALE	I	II	III	IV
Marton	Deep approach	62		33	
Pask	Comprehension learning	73			
Biggs	Intrinsic motivation	54		47	
Biggs	(Internality)	(61)			
Biggs	(Openness)	(50)			
Marton	Surface approach		67		
Pask	Operation learning		67		
Biggs	Extrinsic motivation		61		
Entwistle	Fear of failure		36		-32
Entwistle	Syllabus bound	-41	50		
Ramsden	Strategic approach		41		
Entwistle	Organised study methods			64	
Entwistle	Achievement motivation		36	45	
Entwistle	Disillusioned attitudes			-55	
Entwistle	(Sociability)				(58)

(Entwistle, et al, 1979)

At this stage the researchers (Entwistle and Ramsden) decided to attempt to construct a framework which would bring together the work of Marton, Pask and Biggs. This framework was provided "partly by the factor analysis of the Lancaster inventory and partly by the earlier conceptual analysis"(Entwistle, et al, 1979). This framework is of particular importance in the subsequent interpretation of the inventory results, since the researchers themselves proposed that this framework "will be used to guide subsequent development of the inventory, which in turn will lead to empirical testing of the underlying model of learning and studying"(ibid).

The researchers felt that they had good ground for proposing this framework, which accorded closely with that proposed by Biggs:

> "The factor analysis of our scales and those of Biggs provided strong support for the existence of three major orientations to studying towards, respectively, meaning, reproduction, and achievement. It is important to recognise the strength of this evidence, coming as it does from different inventories used in different educational systems. If students did not themselves recognise some consistency in their own methods of studying, it is difficult to see how distinctive patterns of response could be obtained by this type of analysis." (Entwistle, et al, 1979)

This conceptual framework is shown in Figure 1.

FIGURE 1. Categories describing distinctive approaches to learning.

<table>
<tr><th rowspan="2">Factor</th><th rowspan="2">Orientation and intention</th><th rowspan="2">Motivation (personality type)</th><th rowspan="2">Approach or style</th><th colspan="2">Process</th><th rowspan="2">Outcome</th></tr>
<tr><th>Stage I</th><th>Stage II</th></tr>
<tr><td rowspan="3">I</td><td rowspan="3">Understanding</td><td rowspan="3">Intrinsic

(Autonomous and syllabus-free)</td><td>Deep approach/ versatile</td><td colspan="2">All four processes below used appropriately to reach understanding</td><td>Deep level of understanding</td></tr>
<tr><td>Comprehension learning</td><td>Building overall description of content area</td><td>Reorganising incoming information to relate to previous knowledge or experience and establishing personal meaning</td><td>Incomplete understanding attributable to globetrotting</td></tr>
<tr><td rowspan="2">II</td><td rowspan="2">Reproducing</td><td rowspan="2">Extrinsic and fear of failure

(Anxious and syllabus-bound)</td><td>Operation learning</td><td>Detailed attention to evidence and steps in the argument</td><td>Relating evidence to conclusion and maintaining a critical, objective stance</td><td>Incomplete understanding attributable to improvidence</td></tr>
<tr><td>Surface approach</td><td>Memorisation</td><td>Overlearning</td><td>Surface level of understanding</td></tr>
<tr><td>III</td><td>Achieving high grades</td><td>Hope for success

(Stable, self-confident, and ruthless)</td><td>Organised/ achievement orientated</td><td colspan="2">Any combination of the six above processes considered appropriate to perceived task requirements and criteria of assessment</td><td>High grades with or without understanding</td></tr>
</table>

(Entwistle, et al, 1979)

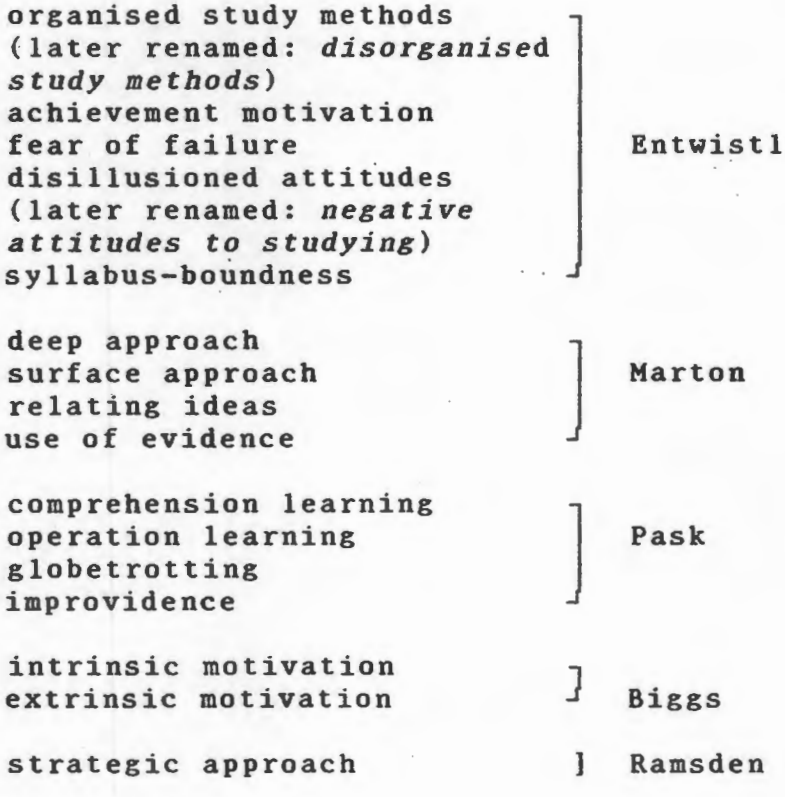
A revised Inventory reflecting this framework was then developed. The sub-scales of internality, openness, and sociability were dropped as they seemed to add little to the definition of the three major factors. In addition, the

pathologies of globetrotting and improvidence were separated from their respective styles and constituted as separare entities. Based on the conceptual framework proposed, it was decided to restrict 'deep approach' to the intention to understand and to add as separate sub-scales two of the processes identified as necessary for deep-level processing, 'relating ideas' and 'use of evidence'.

The final sixteen sub-scales were limited to a maximum of four items per sub-scale in order to make the inventory of manageable length (except for 'surface approach' which had proved to be the most difficult to define, and for which six items were retained). (A list of sub-scales and the items within each is shown as Appendix A.)

Since the sub-scales in the final version of the Approaches to Studying Inventory were derived from a number of different sources, the conceptual origin of each sub-scale is indicated in Figure 2.

FIGURE 2: The conceptual origins of the subscales of the Approaches to Studying Inventory



MAIN STUDY USING THE FINAL VERSION OF THE LANCASTER APPROACHES TO STUDYING INVENTORY

The inventory in its final form was now administered to 2208 second-year undergraduate students in 66 departments at universities and polytechnics in England, Wales, Scotland and Northern Ireland. These students were in departments of English, history, economics, psychology, physics and engineering (Entwistle & Ramsden, 1983 p 44).

One of the main purposes of this part of the programme was to investigate how the sub-scales inter-related in terms of the conceptual framework proposed. The correlations obtained between the subscales followed the patterns anticipated. The correlations for the three main orientations as well as for the dimension of styles and pathologies are given in Table 3.

In order to examine these inter-relationships and to present these more clearly, factor analysis, followed by rotation to oblique simple structure using SPSS software was employed. The results of this factor analysis are given in Table 4.

TABLE 3

Correlations between sub-scales of the Approaches to Studying Inventory

	Meaning			Reproducing				Achieving				Styles and Pathologies			
	DA	RI	UE	IM	SA	SB	FF	EM	ST	DS	NA	AM	CL	GL	OL	IP
Meaning Orientation																
Deep Approach	48	43	47	-09	-28	-05	-12	24	-22	-25	19	37	-03	06	-05	
Relating Ideas		40	39	-03	-22	03	-11	22	-10	-17	13	39	08	03	02	
Use of Evidence			36	-11	-15	-06	-03	21	-14	-22	20	24	-12	15	-01	
Intrinsic Motivation				-20	-37	-08	-35	17	-22	-41	16	37	-07	-07	-12	
Reproducing Orientation																
Surface Approach					37	32	28	18	18	23	11	-09	24	29	42	
Syllabus-Boundness						27	32	06	24	22	06	-28	11	37	35	
Fear of Failure							15	03	22	21	04	-01	19	22	39	
Extrinsic Motivation								16	07	13	20	-19	04	30	27	
Achieving Orientation																
Strategic Approach									-20	-17	25	03	-09	24	12	
Disorganized Study Methods										30	-10	06	24	-05	13	
Negative Attitudes to Studying											-24	-02	25	-02	13	
Achievement Motivation												04	-02	19	08	
Styles and Pathologies																
Comprehension Learning													18	-23	-12	
Globetrotting														-07	19	
Operation Learning															41	

Decimal points omitted.
Total Sample N = 2208; correlations statistically significant with r > 0.06

(Entwistle & Ramsden, 1983 p 234)

TABLE 4

Factor analysis of Approaches to Studying Scales (N=2208)

Variables	Factors I	II	III	IV
Academic Performance				
School	(-02)	(-13)	(-15)	(-07)
Higher Education	31	-26	-39	(19)
Approaches to Studying				
(DA) Deep Approach	70			(22)
(RI) Inter-relating Ideas	65			
(UE) Use of Evidence	54			(23)
(IM) Intrinsic Motivation	72		-25	
(SA) Surface Approach		57	36	30
(SB) Syllabus-boundness	-41	58		(24)
(FF) Fear of Failure		50	34	
(EM) Extrinsic Motivation	-25	38		53
(ST) Strategic Approach	29			48
(DS) Disorganized Study Methods	-25		50	
(NA) Negative Attitudes to Studying	-39		52	
(AM) Achievement Motivation	(24)			45
(CL) Comprehension Learning	55	(-24)	30	
(GL) Globetrotting			52	
(OL) Operation Learning		62		44
(IP) Improvidence		68	(24)	26

Decimal points and most loadings less than .25 omitted.

(Ibid p 49)

The four factors produced were designated meaning orientation, reproducing orientation, non-academic orientation and achieving orientation, defined in terms of the sub-scales as follows:

Meaning orientation -	deep approach comprehension learning inter-relating ideas use of evidence intrinsic motivation
Reproducing orientation -	surface approach improvidence fear of failure syllabus-boundness extrinsic motivation
Non-academic orientation -	disorganised study methods negative attitudes to study globetrotting
Achieving orientation -	achievement motivation extrinsic motivation strategic approach

This large-scale study confirmed the stability of the two primary orientations, namely meaning and reproducing, while indicating that the grouping of sub-scales was not as definitive when subject areas were analysed independently (Entwistle & Ramsden, 1983 p 51).

The Inventory had developed to the point where empirical evidence obtained from a number of studies (Entwistle, et al, 1979; Watkins, 1982; Van Rossum & Schenk, 1984) indicated that it provided a useful framework within which to describe different approaches to studying and that it

yielded results consistent with the research perspectives of Marton, Pask and Biggs. The stability of the factor structure was not maintained in at least one of these studies (Watkins, 1982), and it was this, in part, that prompted the present study to establish whether greater clarity could be obtained with respect to the factor structure of the Approaches to Studying Inventory.

COURSE PERCEPTIONS INVENTORY

Flowing from the work of Miller and Parlett (1974), Marton and Säljö (1976a ;1976b), Marton and Svensson (1979) and Laurillard (1979b) was the awareness that learning styles and in particular learning strategies were not fixed, but were conscious or unconscious responses to the context of the learning task itself. Some contextual elements were relatively easy to identify. The criteria for evaluating learning (the type of test anticipated) had a demonstrable effect on the learning strategy adopted (Marton & Säljö, 1976b). The student's attitude towards the task played a role in determining the strategy (Laurillard, 1979a). In addition to these aspects of the context which were beginning to emerge from the phenomenographical perspective on student learning, there was a long tradition of intuitive links between learning outcome and learning context which identified aspects (such as staff-student relationships, lack of choice over method and content, the quality of teaching and the structure of courses) as important variables in the learning context which might affect the quality of student learning (Entwistle & Ramsden, 1983 p 116).

As part of the SSRC research programme at Lancaster extensive interviews were conducted with students. The object of these interviews was to explore the strategies employed in carrying out particular types of academic tasks in order to shed further light on the interpretation of the results obtained from the Approaches to Studying Inventory. This second-order perspective was necessarily complementary to the statistical analysis of the results, since this analysis could not of itself fully explain any association between the two sets of variables. In addition, considerable light was shed on the effect of perceived contextual factors on the approaches that students adopted to learning tasks. Studies conducted by Laurillard (1979a; 1979b) and by Gaff (Gaff, et al, 1976) indicated that this was a fruitful area for study using as departure point the students' perceptions of the context, as opposed to earlier studies which had tried to classify contexts in terms of quantitative aspects such as size and staff-student ratio.

The Lancaster programme decided to concentrate on differences between disciplines (ie departments). An initial interview study was conducted using 22 students from two departments, and both groups used similar constructs to describe their learning environments. From this stage of the programme certain contextual constructs were identified - "the effects of their lecturers in terms of encouraging learning, lecturing effectively and offering help with study

problems"(Entwistle & Ramsden, 1983 p 120); assessment methods, workload and formality or informality of teaching and learning.

At this stage the researchers felt that the results were sufficiently encouraging to warrant the development of a questionnaire which could be used to identify and compare students' perceptions of the context of their learning. Items for this preliminary questionnaire were derived from the interviews conducted and from earlier research conducted by Paul Ramsden and others into students' perceptions of courses (Ramsden, 1976). 47 items thus derived were grouped into eight hypothesized dimensions (scales):

staff understanding
formal relationships
relevance to work
frame strength
formal instruction
workload
external pressure to work
homogeneity of the department
(Entwistle & Ramsden, 1983 p 122)

This first version of the Course Perceptions Questionnaire (CPQ) was administered to students during 1977 and 1978. The scales were refined using item analysis and the results as a whole were subjected to alpha factor analysis (ibid, p 123). On the basis of these analyses and a subsequent analysis carried out on a slightly revised version of the CPQ, items were regrouped to form eight dimensions as given in Table 5.

TABLE 5 Dimensions of learning environments derived from factor analysis of the first version of the CPQ

Dimensions	Meaning
Relationships with students	Closeness of lecturer/student relationships; help and understanding shown to students.
Commitment to teaching	Commitment of staff to improving teaching and to teaching students at a level appropriate to their current understanding.
Workload	Pressure place on students in terms of demands of the syllabus and assessment tasks.
Formal teaching methods	Formality or informality of teaching and learning (e.g. lectures v individual study).
Vocational relevance	Perceived relevance of courses to students' careers.
Social climate	Frequency and quality of academic and social relationships between students.
Clear goals and standards	Extent to which standards expected of students are clear and unambiguous.
Freedom in learning	Amount of discretion possessed by students in choosing and organising academic work.

(Entwistle & Ramsden, 1983 p 124)

A revised version of the questionnaire was then developed to given uniformity to the instrument itself. All scales were limited to six items by the deletion of weak items or the

addition of new items. This revised CPQ was administered to 767 students in nine departments at three universities during 1978. Item analysis largely confirmed the integrity of the revised scales (ibid, p 125). Because the scales **relationships with students** and **commitment to teaching** failed to emerge empirically, items in these two scales were re-ordered to give two new scales of **good teaching** and **openness to students.** The questionnaire was reduced to 40 items (5 per scale) and some of the items were rewritten.

The final version of the questionnaire was administered to 2208 students simultaneously with the Approaches to Studying Inventory as part of the major research programme. Because of the demonstrated ability of the CPQ to distinguish between departments in terms of the perceptions students held on the eight scales of the questionnaire, it was hoped that relationships between perceived contextual factors and approaches to studying could be established empirically (in addition to relationships that had been identified in the interview studies).

Since this was almost the only large-scale study of learning contexts from a second-order perspective, and since it was linked methodologically, conceptually and empirically to the research on approaches to studying, it was logical that the relationship between the Course Perceptions Questionnaire and the Approaches to Studying Inventory should form a major

part of the present study. It was the firm belief of the Lancaster researchers that the investigation of these relationships would be one of the most beneficial areas for the improvement of teaching and learning in higher education (Laurillard, 1979a; 1979b; Ramsden, 1979; Ramsden & Entwistle, 1981; Entwistle & Ramsden, 1983 p 177).

CHAPTER THREE - THE REPLICATIVE STUDY

AN INTRODUCTION TO THE STATISTICAL PROCEDURES USED IN THE DEVELOPMENT AND INTERPRETATION OF THE APPROACHES TO STUDYING INVENTORY AND THE COURSE PERCEPTIONS QUESTIONNAIRE

Before the statistical procedures adopted in the replicative study are described it is necessary to consider the procedures that were employed in the development, analysis and interpretation of the Approaches to Studying Inventory and the Course Perceptions Questionnaire.

STATISTICAL PROCEDURES USED FOR THE DEVELOPMENT OF THE ASI AND THE CPQ

The development of both instruments was accomplished in four basic stages. Firstly there was the generation of a pool of items drawn from previous studies, parallel research projects and the extensive interviews with students that formed a major part of the research programme. (The derivation of the 'item pool' for both inventories has been dealt with in Chapter 2.)

The second stage involved the definition of constructs (ie the sub-scales) into which these items could be grouped. In the case of the ASI many of these constructs (such as 'comprehension learning', 'operation learning', 'deep approach', and 'surface approach') were already conceptually defined, whereas the constructs of the CPQ were hypothesized

on the basis of earlier research (Entwistle & Ramsden, 1983 p 120) and the basis of the student interviews (Ramsden, 1976).

The third stage involved the refining of these constructs. Here two methods were employed. The first was a conceptual analysis of items to ensure that the grouping of items into constructs was consistent with the conceptual framework and that each construct possessed content validity (ie. that all the items in a particular sub-scale appeared to measure the same construct). The second method was item analysis. This assumes that the association between items within a sub-scale is stronger than the association between items in different sub-scales. On the basis of this assumption items are selected which exhibit the highest level of internal consistency (ie. which provide the best grouping of items within a construct) and the weakest items are discarded or modified. At the conclusion of this third stage both inventories had been refined conceptually and statistically on the basis of certain clear assumptions:

- sub-scales represented discrete constructs which were conceptually independent, although possibly inter-related

- items were placed in sub-scales on the basis of conceptual content validity and on the basis of the strength of their association with other items in the same sub-scale.

It is important to bear these two assumptions in mind, since an alternative methodology which does not rest on these assumptions could have been adopted.

The fourth stage involved the use of factor analytic procedures. Factor analysis allows for the exploration of structures implicit within a set of data. In addition it explores the relationships that exist between all the variables without presupposing an association between any group of variables. Its value in reducing the complexity of data is well expressed by Cattell (1973 p 18): "Factor analysis is a holistic method in that it aims to discover and deal with more massive functional and organic wholes instead of losing research perspective in a mass of atomistically conceived variables." Its explorative value is emphasized by the same author when he says: "The factor analyst is suspicious of choosing the important variable a priori no matter how self-evident their significance may seem to the experimenter"(ibid p 15).

The two stages of factor analysis are the extraction of factors (groupings of variables - a process which parallels the construction of sub-scales, except that the departure point is the mathematical association of variables, whereas in the methodology adopted by Entwistle and by Ramsden the construction of sub-scales was accomplished largely conceptually) and their subsequent rotation to represent the association between groups of variables (the factors) in different, but mathematically equivalent, ways. This rotation is essentially to assist in the interpretation of the composition of the factors.

Factor analysis was applied in a variety of forms at different stages of the research programme (see Chapter 2). The analysis using the 64 items in the ASI extracted 17 factors. "The 17 factor solution produced few identifiable groupings of items" (Entwistle & Ramsden, 1983 p 51). Earlier, Entwistle states, "The separation into sixteen sub-scales was designed to keep dimensions conceptually distinct; the separation could not be justified on the basis of empirical relationships" (ibid p 50 [our emphasis]).

Factor analysis of the original items used in the CPQ also failed to produce an empirical pattern of factors that paralleled the conceptual division of the sub-scales (ibid p 124-127 [our emphasis]).

STATISTICAL PROCEDURES USED FOR THE INTERPRETATION OF THE ASI AND THE CPQ

Both researchers decided to proceed with factor analysis for the interpretation of the inventory results since it was a method which enabled the measure of association between sub-scales to be explored. In order to employ factor analysis at this stage, they had to create conceptual variables (a linear combination of items that conceptually made up the original sub-scales) and use these hypothesized variables as the source variables for their factor analysis. Instead of using the original variables (64 for the ASI and 40 for the CPQ) they used the sub-scales (16 for the ASI and 8 for the CPQ) as the variables for their factor analyses. The factor structure thus produced then formed the basis for the interpretation of the results of the two inventories.

Factor analysis was also used to explore the measures of association between the sub-scales of the two inventories. The interpretation of the results of the factor analysis conducted was, in all cases, amplified by the conclusions drawn from the interview studies. However, the validity of the results obtained from the factor analysis depends to a very large extent on the integrity of the sub-scales.

Since in the replicative study the conceptual derivation of the sub-scales cannot be replicated, it is necessary to test the assumptions that underly the statistical techniques employed in their development in order to establish whether empirical evidence can be obtained from another source (ie. the research project undertaken at the Cape Technikon) which supports the conclusions of the original research programme.

THE INSTITUTIONAL SETTING OF THE REPLICATIVE STUDY

The Cape Technikon is an institution for higher education, established in 1976 from the Cape College for Advanced Technical Education. The Cape Technikon seeks to provide career-orientated education over a wide range of disciplines, and has as its primary function the provision of technically trained manpower to meet the technological requirements of the region that it serves. It offers full-time and part-time diploma courses over a period of three years, upon completion of which diplomates may proceed to a Higher Diploma (1 year post-diploma study), a Master's Diploma in Technology and finally a Laureatus. The diploma structure thus parallels the degree programme of the universities, except that as part of the three-year diploma course most students are involved in co-operative training of some sort (by co-operative training is meant the system whereby the formal institutionalised instruction is supplemented by periods of practical experience in a related commercial or an industrial environment). This co-operative training may constitute up to fifty per cent of the course time.

It was decided to use the Cape Technikon for the replicative study for a number of reasons:

- The author, being in charge of the Teaching Development Unit at the Cape Technikon, was in an excellent position to obtain the co-operation of the institution's governing body, and the staff in the administration of the two inventories.

- The Technikon is sufficiently different in nature, and in student body, from universities both in South Africa and overseas to make the replication of value in terms of the ability to generalise from the original research programme results, to institutions of higher education, other than universities.

- The student population of the Cape Technikon possessed certain features which opened up avenues for exploring the sensitivity of the two inventories used. These features were:
  - a wide diversity of 13 disciplinary groupings, (see Table 6) which would ensure that the results did not reflect the study orientations of only one or two particular disciplines
  - a division into two populations on the basis of language in the ratio English to Afrikaans of two to one.

It was felt that this population sample, both by virtue of its diversity and by virtue of its size, would be an ideal one on which to conduct a replicative study of the empirical aspects of the Lancaster research programme.

TABLE 6

Number of students in English and Afrikaans population by discipline

DISCIPLINE	LANGUAGE	
	ENG (n=1194)	AFR (n=590)
School of Accounting	197	90
School of Art and Design	102	7
School of Food and Clothing Technology	148	37
School of Communication and Languages	19	12
School of Management	52	28
School of Secretarial Studies	140	94
School of Teacher Training	33	49
School of Architecture and Building	57	16
School of Civil Engineering	107	91
School of Electrical Engineering	99	27
School of Mechanical Engineering	87	48
School of Paramedical and Biological Sc.	106	87
School of Physical Sc. and Mathematics	47	4

The inventories and the preliminary questionnaire were given to 1812 students in November 1984. The inventory results were then transferred to punch cards and the transfer of data carefully checked. The complete set of data was then printed and individual records with insufficient information to warrant inclusion were deleted, leaving a sample of 1784 students.

At this stage it was discovered that due to a clerical error in the typing of the ASI one question had been omitted from the English version of the inventory. This item, number 59, "I think it is important to look at problems rationally and logically without making intuitive jumps" formed one of the four items in the sub-scale operation learning. This item was therefore deleted from the Afrikaans results so that both sets of results for the ASI had only 63 items and were therefore capable either of direct comparison or combination.

In order to explore the capabilities of SPSS software as well as to investigate the capability of the UCT main-frame Sperry 1100, it was decided to attempt to factor analyse the individual items of the ASI and CPQ inventories. To this end, alpha factor analysis followed by oblique rotation was attempted using SPSS software. The English (n=1194) and

Afrikaans (n=590) populations were treated separately. Missing data was dealt with by employing pairwise deletion in the construction of the correlation matrix used as input to the factor procedure.

The results of this initial (exploratory) investigation were inconclusive. Difficulty in satisfying the convergence criterion (in terms of the default number of iterations) for the communalities was experienced and, in the process of increasing the number of iterations a major setback occurred which also delayed considerbly the processing of the results.

The American licencer of the SPSS software that was being used for the analysis withdrew licensing rights from all South African educational and research institutions as part of the United States efforts to isolate South Africa. It appeared, at this stage, that no further progress could be made with the replicative analysis. However, towards the end of 1986, access was obtained to SAS software at the Medical Research Council's Institute for Biostatistics. This SAS software allows for the same factor analytic procedures to be followed as does the SPSS software, and all subsequent analyses were performed using SAS software.

FACTOR ANALYSIS OF THE SUB-SCALES OF THE ASI AND CPQ

For the replicative analysis the scores of individual items were grouped according to the sub-scales as given by Entwistle and Ramsden (1983) and summated. These summations were checked with a random sample of the original questionnaire responses.

Because the proportion of missing data was so small (0,48% for the English sample and 1,02% for the Afrikaans sample) it was decided to use the response option 2 ("to be used if the item doesn't apply to you or if you find it impossible to give a definitive answer") in order to avoid unequal numbers of observations for values contained in the correlation matrix. It was felt that failure to complete a response for an item, in most cases, probably reflected this view.

The initial analysis was conducted using the summated sub-scales of the ASI and the CPQ. The aim was to replicate the final part of the Lancaster programme, which sought, using factor analysis, to establish measures of association between features of the departmental learning context (as measured by the CPQ) and the approaches to studying (as measured by the ASI) (Ramsden & Entwistle, 1981; Entwistle & Ramsden, 1983 p 85). It was felt that by starting with the final aspect of the programme, which was the most

significant in terms of its potential for improving the quality of learning, it could be established how closely the results of the present study matched those of the original programme, and which aspects of the two inventories warranted further analysis in the light of the differences (if any) that became apparent. It was decided to treat the English and Afrikaans samples separately as this would allow differences between the two populations, if significant, to be explored. The sizes of the two populations were sufficient to allow for their separate analysis.

Alpha factor analysis of the 24 sub-scales (16 from the ASI and 8 from the CPQ) as well as two items from the background questionnaire (level of performance at high school; self-rated academic performance at the Technikon) was carried out followed by orthogonal (varimax) and oblique (promax) rotation. The results for the English and the Afrikaans population samples are given in Tables 7 and 8 respectively. Table 9 gives the factor analysis of the ASI and the CPQ sub-scales obtained in the Lancaster programme.

TABLE 7

Factor analysis of Approaches to Studying Inventory and Course Perceptions Questionnaire sub-scales for the English sample (n=1194)

	FACTORS			
	I	II	III	IV
Coefficient alpha	0,94	0,91	0,79	0,72
VARIABLES				
Academic performance				
School				
Higher Education		-35		
Approaches to Studying				
Deep approach			67	
Relating ideas			65	
Use of evidence			62	
Intrinsic motivation			52	
Surface approach		61		
Syllabus-boundness		37		39
Fear of failure		53		
Extrinsic motivation		28		27
Strategic approach			47	33
Disorganised study methods		56		
Negative attitudes to study	-32	35		
Achievement motivation			33	
Comprehension learning			43	
Globetrotting		47		
Operation learning			26	36
Improvidence		63		
Course Perceptions				
Formal teaching methods				41
Clear goals and standards	51			36
Workload		45		
Vocational relevance	50			
Good teaching	77			
Freedom in learning	65			
Openness to students	76			
Social climate	55			

Decimal points and loadings less than ,25 have been omitted.

TABLE 8

Factor analysis of Approaches to Studying Inventory and Course Perceptions Questionnaire sub-scales for the Afrikaans sample (n=590)

	FACTORS			
	I	II	III	IV
Coefficient alpha	0,94	0,92	0,76	0,69
VARIABLES				
Academic performance				
School				
Higher Education			36	-33
Approaches to Studying				
Deep approach			61	
Relating ideas			46	35
Use of evidence			50	
Intrinsic motivation			48	
Surface approach	63		27	
Syllabus-boundness	47			-34
Fear of failure	55			
Extrinsic motivation	40			
Strategic approach			56	
Disorganised study methods	64			
Negative attitudes to study	52			
Achievement motivation			57	
Comprehension learning				26
Globetrotting	41			36
Operation learning			52	
Improvidence	53			
Course Perceptions				
Formal teaching methods				-25
Clear goals and standards		68		
Workload	41			
Vocational relevance		51		
Good teaching		76		
Freedom in learning		50		
Openness to students		75		
Social climate		56		

Decimal points and loadings less than ,25 have been omitted.

TABLE 9

Factor analysis of Approaches to Studying Inventory and Course Perceptions Questionnaire sub-scales(N=2208)

VARIABLES	FACTORS					
	I	II	III	IV	V	VI
Academic performance						
School						29
Higher Education	26		(-20)		-45	
Approaches to Studying						
Deep approach	71			(22)	-29	
Relating ideas	67			(21)		
Use of evidence	52			28	-29	31
Intrinsic motivation	64			39	-27	-34
Surface approach			61			-30
Syllabus-boundness	-38	26	53			
Fear of failure			58		26	
Extrinsic motivation		47	37			-51
Strategic approach	27				-37	-26
Disorganised study methods					54	
Negative attitudes to study	-28			-32	52	
Achievement motivation					-32	
Comprehension learning	60					
Globetrotting					44	
Operation learning			56		-29	-30
Improvidence			65			-33
Course Perceptions						
Formal teaching methods		75				
Clear goals and standards		53		38	-25	
Workload			45	-23		
Vocational relevance		73				
Good teaching				77		
Freedom in learning		-28		50		
Openness to students				79		
Social climate		25		47		

Decimal points and loadings less than ,25 have been omitted.

(Entwistle & Ramsden, 1983 p 185)

INTERPRETATION AND SUBSEQUENT ANALYSIS

A comparison of Tables 7 and 8 with Table 9 reveals a large measure of agreement for the ASI. The two principle orientations, **meaning orientation** and **reproducing orientation** are preserved with minor differences, while a third orientation is not consistently present in Tables 7 and 8 and would need to be explained in terms of differences between the English and Afrikaans population samples. The CPQ failed to separate into two identifiable factors in either population sample, although the association between workload and reproducing orientation is present in both samples. (This is the only association between the two principle study orientations and the sub-scales of the Course Perceptions Questionnaire.)

The differences between the factor structure obtained in the original research programme and the factor structures of the English and Afrikaans samples could be explained in terms of the conceptual framework of the two inventories. These differences will be discussed in Chapter 4.

It was decided at this stage to use the capability of the SAS software to explore relationships implicit in the data, to explore possible combinations of the original items, and to do this for all of the 103 variables from the two

inventories. It was hoped that this exploration of empirical relationships (as opposed to hypothesized relationships) would accomplish two objectives:

1. It might indicate associations between items in the ASI and items in the CPQ which had not been revealed by the factor analysis of the sub-scales, and which might throw further light on the relationship between contextual factors and approaches to studying, an aspect which had been poorly demonstrated by the purely empirical associations of the factor analysis of the sub-scales of the two inventories.

2. It appeared that a number of the original items in the ASI were open to more than one interpretation. While from the perspective of the researchers the conceptual groupings were clear, from the perceptions of the students in the present study, as revealed by an empirical analysis, items might be interpreted differently. This would mean that whereas an item was intended to reflect a particular construct, as interpreted by the majority of students it might reflect a different construct.

This would imply that while a particular construct in the ASI was measured by a number of items (usually 4) for a given population (such as UK university and polytechnic students) the same construct might be defined by a different combination of items for a different population. This different association of items would be revealed by an examination of a factor analysis of the original items.

It was felt there was more than a pragmatic basis for this stage of the replication. These theoretical considerations were:

1. An exploration of the association between items in the two inventories might reveal a combination of items which closely paralleled the sub-scale structure that was originally obtained by conceptual and item analysis. Confirmation of the integrity of the groupings of items into the sub-scales proposed by Entwistle and by Ramsden, coming from a purely empirical analysis, would greatly increase the confidence that could be placed in both instruments as reflecting conceptually and empirically discrete constructs.

2. By employing a method which explored only the strength of association between items **within** a sub-scale (the sub-scales having been conceptually defined and the items constituting them refined using item analysis together with conceptual analysis), the possibility of items being more strongly associated **between** sub-scales was ruled out. A factor analysis of all the items together would remove this restriction and might reveal empirical associations which differed from the original sub-scale groupings, but which might be as conceptually defensible as the original associations.

FACTOR ANALYSIS OF THE 103 ITEMS OF THE ASI AND CPQ

Alpha factor analysis using SAS software was performed on the 103 items of the ASI and CPQ for the English population sample (n=1194). The English sample was selected because it was significantly larger than the Afrikaans sample and because the factor structure obtained from it (in terms of the independent analysis of the sub-scales in the two inventories) more closely paralleled the factor structure obtained by Entwistle and Ramsden (see Tables 7 and 9).

Alpha factor analysis produced 16 factors. A careful examination of the oblique rotated factor pattern matrix (see Table 10) indicated the following:

- There is a general separation of items (rather than a combination of items) from the two inventories. The absence of any strong association between items of the two inventories indicates that the items are measuring conceptual constructs that are not associated. The factor structure matrix failed to provide any additional associations and the inter-factor correlations (Table 10) failed to add significantly to this picture.

TABLE 10 Rotated factor pattern matrix for the 103 items of the ASI and CPQ for the English sample (n=1194)

VARIABLE	FACTOR															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CPQ 27 GT	68															
CPQ 31 OS	63															
CPQ 23 OS	64															
CPQ 40 OS	63															
CPQ 35 GT	55															
CPQ 11 GT	47															
CPQ 7 OS	47															
CPQ 19 GT	44															
CPQ 15 OS	42															
CPQ 21 SC	42											28				
CPQ 26 FL	42															
CPQ 28 CG	36															
CPQ 10 FL	35															
CPQ 29 SC	35												-31			
CPQ 38 CG	31								32							
CPQ 34 FL	30															
CPQ 12 CG	29								23							
CPQ 3 GT	-43								22						26	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ASI 29 RI		62														
ASI 31 CL		60													21	
ASI 34 DA		54														
ASI 56 RI		43														24
ASI 10 DA		43														
ASI 21 CL		42														
ASI 30 SA		42														
ASI 60 UE		41													-25	
ASI 6 CL		40											-21			
ASI 38 UE		39													-23	
ASI 2 RI		36														
ASI 40 GL		33														
ASI 5 DA		32														
ASI 44 CL		32														
ASI 24 DA		31		22												
ASI 18 ST		23		22												
ASI 50 RI		20														
ASI 14 DS			63													
ASI 28 DS			58													
ASI 1 DS			54													

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ASI 17 DS			53													
ASI 19 SA			28													
ASI 3 GL			28									-22			21	
ASI 37 ST		24														
ASI 27 OL				49												
ASI 9 SB				48												
ASI 25 SB				45												
ASI 13 IP				44												
ASI 11 OL				41												
ASI 41 SA			23	37												
ASI 59 IP				34											-27	
ASI 26 FF			24	31												
ASI 43 OL		23		30												
ASI 12 FF			30	29	24											
ASI 33 UE				28										23		
ASI 48 SA				26				22								
ASI 53 FF				22												
ASI 20 ST																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CPQ 30 WL					70											
CPQ 6 WL					62											
CPQ 36 WL					59											
CPQ 22 WL					51											
CPQ 14 WL					50											
ASI 35 EM						53		24								
ASI 62 NA						51										
ASI 49 NA						41							21			
ASI 23 NA						38										
ASI 8 NA						35										
ASI 32 EM						33		30								
CPQ 32 VR					-32											
ASI 15 AM					-41											
ASI 39 IM					-50											
CPQ 25 FT							47									
CPQ 20 CG							37									
ASI 16 SA							30									
ASI 51 IP			24				29									
ASI 46 GL							24				23					
ASI 61 IP																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CPQ 9 FT							-33									
ASI 22 EM								68								
ASI 7 EM								57								
CPQ 39 VR	20								52							
CPQ 24 VR									44							
CPQ 16 VR							22		42							
CPQ 8 VR									39							
CPQ 1 FT					24				37							
ASI 47 IM										55						
ASI 63 IM										50						
ASI 55 IM		28					25			30						
ASI 36 SA										-23						
ASI 42 AM											56					
ASI 4 AM											44					
ASI 58 AM											38					
ASI 57 GL											28					
ASI 45 ST											20					
CPQ 5 SC												52				
CPQ 13 SC												48				
CPQ 37 SC																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CPQ 2 FL													45			
CPQ 18 FL	30						26						38			
CPQ 4 CG							-26						31			
CPQ 17 FT					28		24							33		
CPQ 33 FT														32		
ASI 52 SB										-21					27	
ASI 54 UE																37

Inter-factor correlations for the factor analysis of 103 items of the ASI and CPQ for the English sample (n=1194)

	F1	F2	F3	F4	F5	F6	F7	F8
F1						-35		
F2						-31		
F3					33	29	25	
F4					26			30
F5			33	26			(24)	
F6	-35	-31	29					
F7			25		(24)			(-23)
F8				30			(-23)	
F9	36	26		38			(-21)	
F10		33				-31		
F11		25		25				
F12								
F13	25					-25		
F14							(-23)	
F15			26					
F16								

	F9	F10	F11	F12	F13	F14	F15	F16
F1	36				25			
F2		33	25					
F3		-34				-27	26	
F4	38		25					
F5								
F6		-31			-25			
F7								
F8								
F9			29					
F10								
F11	29							
F12								
F13								
F14								
F15								
F16								

Only values greater than ,25 have been shown. Values are multiplied by 100 and rounded to the nearest integer.

Approximate definition of factors in terms of the original sub-scale grouping of items.

F1 : good teaching, openness to students, freedom in learning (part), clear goals (part), social climate (part).
F2 : comprehension learning, relating ideas, deep approach, use of evidence (part)
F3 : disorganised study methods
F4 : operation learning (part), syllabus-boundness (part), fear of failure (part), improvidence (part)
F5 : workload
F6 : negative attitudes to study, extrinsic motivation (part)
F7 : improvidence (part)
F8 : extrinsic motivation (part)
F9 : vocational relevance
F10: intrinsic motivation (part)
F11: achievement motivation (part)
F12: social climate (part)
F13: freedom in learning (part)
F14: formal teaching (part)
F15: undefined
F16: undefined

- The integrity of four of the eight sub-scales of the CPQ was confirmed, namely **good teaching, openness to students, vocational relevance** and **workload** but the integrity of the remaining four was called into question.

Items from the CPQ were grouped together in factor 1 (18 items), factor 5 (5 items constituting the sub-scale *workload*), factor 9 (4 out of 5 items constituting the sub-scale *vocational relevance*) and a smaller grouping of items in factor 12 (2 items from the sub-scale *social climate*) factor 13 (2 items from the sub-scale *freedom in learning* and 1 item from *clear goals and standards*) and factor 14 (2 items from the sub-scale *formal teaching methods*). The remaining 6 items were not significantly associated.

Factor 1 consisted of 5 items from the sub-scale *good teaching*, 5 items from *openness to students*, 3 items from *freedom in learning*, 3 items from *clear goals and standards* and 2 items from *social climate*.

- The grouping of items belonging to the ASI provided a most interesting picture. The integrity of four of the sub-scales was maintained as defined in the inventory. These were

deep approach (4 items)
relating ideas (4 items)
disorganised study methods (4 items)
negative attitudes to study (4 items)

The integrity of a further four sub-scales was maintained with the loss or addition of only 1 item

intrinsic motivation (3 out of 4 items)
fear of failure (3 items + 1 item *from use of evidence*)
strategic approach (3 out of 4 items)
comprehension learning (4 items + 1 item from *globetrotting*)

Six sub-scales were materially different

use of evidence (2 out of 4 items + 1 item from *surface approach*)
syllabus-boundness (2 out of 3 items + 2 items from *improvidence*)
extrinsic motivation (4 items + 1 item each from *intrinsic motivation* and *achievement motivation* [scored negatively])
achievement motivation (3 items out of 4 + 1 item each from *globetrotting* and *strategic approach*)
operation learning (3 items out of 3 + 2 items from *surface approach*)
improvidence (2 items out of 4 + 1 item each from *surface approach* and *globetrotting*)

Two sub-scales were not preserved at all

surface approach
globetrotting

In all 17 of the 63 items of the ASI showed empirical associations different from the associations imposed by the original grouping of items into sub-scales. (The revised sub-scales of the ASI are given in Appendix C.)

At this stage of the study it was decided to conduct separate factor analyses of the original items for both the ASI and the CPQ to see whether the associations of items tentatively proposed on the basis of the factor analysis of the items from both inventories were maintained or substantially altered.

FACTOR ANALYSIS OF THE 63 ITEMS OF THE ASI FOR THE ENGLISH SAMPLE (n=1194)

Alpha factor analysis, performed on the 63 items of the ASI for the English population sample, produced 8 factors. Examination of the rotated factor pattern matrix and the rotated factor structure correlation matrix (see Table 11) indicated the following:

The integrity of five of the sub-scales was maintained as defined in the inventory. These were

comprehension learning (4 items)
fear of failure (3 items)
operation learning (3 items)
disorganised study methods (4 items)
negative attitudes to studying (4 items)

TABLE 11 Rotated factor pattern matrix for the 63 items of the ASI for the English sample (n=1194)

VARIABLE		FACTOR							
		1	2	3	4	5	6	7	8
31	CL	60							
21	CL	52							
29	RI	48		20					
6	CL	45							
44	CL	43							
10	DA	43							
34	DA	40		24					
40	GL	38							
38	UE	33							
30	SA	31		27					
2	RI	31							
5	DA	25		21			26		
60	UE	23					23		
12	FF		49						
51	IP		46						
26	FF		45						
13	IP		41	27					
9	SB		38	29					
53	FF		34						
		1	2	3	4	5	6	7	8
36	SA		33				-32		
41	SA		32	31					
3	GL		26						
19	SA		26						
50	RI		21						
61	IP		20						
22	EM		-21	44			-23		
25	SB			43					
27	OL	-24	26	41					
11	OL			40					
7	EM			38					
33	UE			37a					
20	ST			35					-22
18	ST			33					
24	DA			29					
43	OL			28					
48	SA			28					
59	IP		23	27					
62	NA				63				
23	NA				56				

		1	2	3	4	5	6	7	8
35	EM				52				
32	EM			21	36				
8	NA				31				
49	NA				29				
15	AM			28	-33				
39	IM				-54				
14	DS					58			
28	DS					51			
1	DS		20			46			
17	DS					44			
37	ST			25		-32			
63	IM						48		
47	IM						48		
45	ST						29		
52	SB						-23		
16	SA				26		-32		
42	AM							52	
4	AM							41	
57	GL		20					29	
46	GL		21					29	
		1	2	3	4	5	6	7	8
58	AM							28	
55	IM	23					23		38
56	RI	29							37
54	UE								30

Only values greater than ,20 have been shown. Values are multiplied by 100 and rounded to the nearest integer.

Rotated factor structure correlation matrix for the 63 items of the ASI for the English sample (n=1194)

VARIABLE		FACTOR							
		1	2	3	4	5	6	7	8
31	CL	58							
21	CL	44							
29	RI	47		23					21
6	CL	43							
44	CL	46						26	
10	DA	41							
34	DA	44		29			21		32
40	GL	42							
38	UE	42				-23	24		30
30	SA	36		31			23		
2	RI	33					21		
5	DA	33		25		-22	39		
60	UE	34		28			33		30
12	FF		52			25			
51	IP		50			32	-32		
26	FF		48			23			
13	IP		41	23				•	
9	SB		37	25					
53	FF		33						
		1	2	3	4	5	6	7	8
36	SA		38		26	25	-39		
41	SA		36	31		22			
3	GL		31			23			
19	SA		32		25	33	-30		
50	RI	24	21				21		
61	IP		22						
22	EM			42	27		-24	29	
25	SB			43					
27	OL		26	38					
11	OL			39					
7	EM			37				21	
33	UE			37					
20	ST			33					
18	ST	22		35					
24	DA	30		34		-30	31		27
43	OL	26		32					
48	SA			29					
59	IP		25	29				21	
62	NA				58				
23	NA				54		-24		

		1	2	3	4	5	6	7	8
35	EM			20	57	31	-27		
32	EM			27	35			22	
8	NA				33	22			
49	NA				37	32	-21		
15	AM			31	-34				
39	IM	26			-57	-24	27		25
14	DS		26		23	57			
28	DS		25		25	55			-24
1	DS		32		21	51	-22		
17	DS		25			47			
37	ST	24		27		-34	23		
63	IM				-22	-20	48		27
47	IM	27			-24	-25	52		23
45	ST	23					32		
52	SB	-23	21		21	32	-36		-21
16	SA		22		30		-33		
42	AM							50	
4	AM							40	
57	GL		24					32	
46	GL		24					33	
		1	2	3	4	5	6	7	8
58	AM							25	
55	IM	40			-23	-24	36		47
56	RI	41			-23		30		47
54	UE								35

Only values greater than ,20 have been shown. Values are multiplied by 100 and rounded to the nearest integer.

Inter-factor correlations fro the factor analysis of the 63 items of the ASI for the English sample (n=1194)

	F1	F2	F3	F4	F5	F6	F7	F8
F1						30	(21)	(21)
F2					25			
F3								
F4					41	-43		-29
F5		25		41		-42		-30
F6	30			-43	-42			(24)
F7	(21)							
F8	(21)			-29	-30	(24)		

Only value greater than ,25 have been shown. Values are multiplied by 100 and rounded to the nearest integer.

The integrity of a further four sub-scales was substantially maintained. These were

deep approach (3 out of 4 items)
improvidence (3 out of 4 items)
strategic approach (3 out of 4 items)
achievement motivation (3 out of 4 items)

The integrity of a further six sub-scales was compromised

relating ideas (2 out of 4 items)
use of evidence (2 out of 4 items)
surface approach (3 out of 6 items)
extrinsic motivation (2 out of 4 items)
intrinsic motivation (2 out of 4 items)
globetrotting (2 out of 4 items)

One sub-scale was not preserved at all

syllabus-boundness

The justification for the division into 16 sub-scales could not be established on the basis of the eight factor solution described above. However, the grouping of items into sub-scales closely paralleled the association of items within factors. A detailed discussion of the results of the factor analysis forms part of Chapter 4.

FACTOR ANALYSIS OF THE 40 ITEMS OF THE CPQ FOR THE ENGLISH SAMPLE (n=1194)

Alpha factor analysis, performed on the 40 items of the CPQ for the English population sample, produced 5 factors. Examination of the oblique rotated factor pattern matrix (see Table 12) indicated the following:

TABLE 12 Rotated factor pattern matrix for the 40 items of the CPQ for the English sample (n=1194)

VARIABLE		FACTOR				
		1	2	3	4	5
40	OS	59				
27	GT	56				
7	OS	55				
18	FL	53			-25	
15	OS	50				
23	OS	46				
19	GT	44				
31	OS	44				
35	GT	43		23		
29	SC	43				
10	FL	42				
11	GT	41			24	
2	FL	34				
34	FL	30				
26	FL	27		27		
3	GT	-44		23		
30	WL		73			
6	WL		64			
36	WL		56		-20	
		1	2	3	4	5
22	WL		54			
14	WL		53			
1	FT	-21	25	25		
17	FT		24	21	-21	
39	VR			54		
24	VR			41		
16	VR			41		
32	VR			38	22	
38	CG			35		
28	CG			33		
8	VR			31	29	
37	SC			27		20
4	CG				38	
9	FT				37	
12	CG			26	34	
33	FT					
20	CG				-42	
25	FT				-45	
5	SC					48
13	SC	22				43
21	SC	37				36
		1	2	3	4	5

Inter-factor correlations for the factor analysis of 40 items of the CPQ for the English sample (n=1194)

	F1	F2	F3	F4	F5
F1			54	34	
F2				(-21)	
F3	54			42	
F4	34	(-21)	42		
F5					

Only value greater than ,25 have been shown. Values are multiplied by 100 and rounded to the nearest integer.

The integrity of six of the sub-scales was maintained as defined in the questionnaire. These were

good teaching	(5 items)
freedom in learning	(5 items)
openness to students	(5 items)
social climate	(5 items)
workload	(5 items)
vocational relevance	(5 items)

The integrity of the remaining two sub-scales was substantially maintained. These were

formal teaching methods	(4 out of 5 items)
clear goals and standards	(3 out of 5 items)

In addition, the inter-factor correlations paralleled the factor structure proposed by Ramsden (Entwistle & Ramsden, 1983 p 129) (see Table 12).

However, the division into eight sub-scales could not be established on the basis of the five factor solution described above. Nevertheless, the associations between items within sub-scales were much stronger than those found in the analysis of the 63 items of the ASI, and in most instances it was not necessary to appeal to the factor structure correlations to justify the sub-scale groupings. A detailed discussion of the results of the factor analysis forms part of Chapter 4.

It was felt at this stage that the replicative analysis had followed the original research programme sufficiently closely, and indeed had extended beyond it, in an effort to resolve questions which were raised during the replicative procedures. Furthermore several conclusions could be drawn in terms of the aims of the present study.

1. On the basis of the replication of the statistical procedures employed by Entwistle and Ramsden in the analysis of the results of their study (1983) the general applicability of certain aspects of their original research findings could be extended and certain aspects could be limited.

2. Questions concerning the methodology of the original research programme and the conclusions drawn had indeed been identified.

3. Areas which warrant further research had been identified.

Chapter 4 provides a detailed interpretation of the findings of the replicative analysis described in this chapter.

CHAPTER FOUR - INTERPETATION OF THE RESULTS OBTAINED FROM THE REPLICATIVE ANALYSIS

In attempting to interpret the results obtained from the replicative analyses, three different aspects will be considered separately. These aspects are:

- the grouping of items into sub-scales for both the ASI and the CPQ and, on the basis of this, the conceptual structure of both

- the factor structure of the ASI and the CPQ

- the associations between the ASI and the CPQ

GROUPING OF ITEMS INTO SUB-SCALES FOR THE ASI

In discussing the grouping of items into sub-scales it is necessary to bear in mind the original procedures employed in the development and refinement of the sub-scales because these will have an important bearing on the interpretation of the factor structure of the items.

For the purposes of development and refinement each of the sub-scales was considered to represent a separate, unidimensional construct. From a pool of items which conceptually were considered to measure different aspects of

the same construct, those items were selected which exhibited the highest item-scale correlation and which raised the internal consistency of the sub-scale (as reflected by the Cronbach Alpha coefficient). This would imply that all the items finally selected to constitute a particular sub-scale were all highly correlated with each other and that all the items were contributing towards the measurement of a single unidimensional construct.

While in the development and refinement of the sub-scales it is legitimate to consider the constructs as independent of each other, in the conceptual framework of the ASI as a whole it is clear that there is a strong association between certain of the constructs.

Factor analysis of the single variables of the ASI permits an examination of the association between items within a sub-scale under the influence of other variables. If the sub-scales are well defined then the associations between items within sub-scales should be stronger than the association between items in different sub-scales. This is not to deny the conceptual association between sub-scales to form broader constructs (termed orientations). In the absence of this conceptual association we would expect a factor analysis of the individual items to preserve the integrity of the sub-scale grouping independently of one another. Given the conceptual association we would expect

that the integrity of the sub-scale groupings would be preserved at least within that broader conceptual association, that is within the orientations.

It is to both these aspects that our discussion of the sub-scale groupings will appeal. We will examine the composition of the sub-scales to see to what extent their integrity is preserved and to what extent the individual items are associated within the broader conceptual groupings.

[In this discussion reference will be made to Table 11 where the factor loadings on the rotated factor pattern for the 63 items of the ASI are given. The reader is referred to this Table for the factor structure and the factor loadings of the individual items.]

A number of the sub-scales preserve their integrity. Most of these do so not in terms of independent factors in the rotated factor pattern but in terms of associations of sub-scale items which are consistent with the broader conceptual associations proposed. These sub-scales are:

deep approach
relating ideas
intrinsic motivation
fear of failure
extrinsic motivation
disorganised study methods
negative attitudes to studying
comprehension learning
operation learning

improvidence
(Entwistle & Ramsden, 1983 p 228-233).

This conclusion, based as it is on an analysis of items under the influence of all other items, is consistent with the results obtained by Entwistle and Ramsden. Their results indicated that of the 34 items constituting nine of the sub-scales whose integrity is preserved (excluding **improvidence**), only 6 items have a corrected item-scale total correlation below 0.30. The four items constituting the sub-scale improvidence have corrected item-scale total correlations between 0.19 and 0.26. (ibid, p 228-233)

The factor analysis of the single variables of the ASI is a much more demanding analysis than the item analysis that was employed in the development of the sub-scales (for the reasons given above) and therefore the preservation of the integrity of ten sub-scales must provide strong supportive evidence for the conceptual validity of these item groupings, and for the universal definition of these sub-scales in terms of their constituent items.

There remain, then, six sub-scales whose integrity is called into question by the factor analysis of the individual items. We will deal with each sub-scale separately on the basis of this analysis.

Use of Evidence (items 38, 33, 54, 60)

This sub-scale has a low reported internal consistency as indicated by the Cronbach Alpha value of 0.38 (ibid, p 228). The present factor analysis indicates the association of items 38, 54 and 60 but indicates that item 33 (*I am usually cautious in drawing conclusions unless they are well supported by evidence*) is more strongly associated with items drawn from sub-scales of the reproducing orientation. This is consistent with the very low reported item-scale correlation for item 33 (0.13) and would indicate that this sub-scale is probably better measured by items 38, 54 and 60 alone. However, the remaining items constituting this sub-scale do not appear to define the construct adequately and more investigation into the nature and measurement of this construct is definitely warranted.

Surface Approach (Items 16, 41, 30, 48, 19, 36)

The appearance of six items to define the sub-scale surface approach indicates the difficulty that Entwistle and Ramsden experienced in trying to measure this construct (ibid, p 43). This difficulty is clearly evidenced when we examine the factor pattern (Table 11). There is no consistent association of items, although five of the six items load on two factors.

Items 36, 41 and 19 load on factor two while items 30, 48 and 41 load on factor three. These two rotated factors are not highly correlated (see Table 11) and would therefore not appear to be representing the same construct. Factor two is composed predominantly of items from the sub-scales **fear of failure** and **improvidence**, while factor three is composed predominantly of items from the sub-scales **operation learning** and **strategic approach**. This is consistent with the nature of the items associating with these two factors, in that the three items associated with factor three all deal with memorising information which will be useful later while two of the items associated with factor two deal mainly with an awareness of the pressure of studying and the attendant effect that this has on understanding. This would seem to be consistent with a fear of failure and the pathology of improvidence with its over-emphasis on attention to detail at the expense of real understanding.

This analysis is, however, not as clear-cut as the above interpretation might indicate. Item 41 (*I find I have to concentrate on memorising a good deal of what we have to learn*) loads on **both** factors two and three. Item 30 loads on factor one, which is composed of items from the **meaning orientation**. This movement of item 30 from the sub-scale groupings composing the reproducing orientation to the meaning orientation is supported by the very low reported item-scale correlation of 0.13 (ibid, p 229). In addition,

the final item from this sub-scale, item 16 (*Lecturers seem to delight in making the simple truth unnecessarily complicated)*, fails to load on either factor two or factor three, but loads on factor four, which is composed of items from the sub-scales **negative attitudes to studying** and **extrinsic motivation.**

The picture that emerges of the sub-scale **surface approach** from an examination of the factor structure is one which seems to indicate that no single construct is being measured by the items included in this sub-scale. It would appear either that the items are measuring different aspects of other constructs, such as improvidence or operation learning, or that these items do not adequately represent the construct **surface approach.**

The queries raised as to the integrity and nature of this sub-scale cannot be satisfactorily answered on the basis of this replicative study, and must await further validation from a second-order research perspective and possible further factor analyses of the single variables undertaken with similarly large samples. However, the strong association of all the items of this sub-scale with factors which represent aspects of the reproducing and strategic orientations (with the exception of item 30) would allow for the retention of this sub-scale and its inclusion in the factor analysis of the summated sub-scales on pragmatic

rather than on empirical grounds. A final decision as to the conceptual validity and composition of this sub-scale must await further research finding.

Syllabus-boundness (items 9, 25, 52)

An association between items 9 and 25 is confirmed from the rotated factor pattern, but this association is not extended to item 52. Item 52 loads negatively on factor six, which is composed of two items from **intrinsic motivation** and one from **stategic approach.** This is in keeping with the nature of the item (*I tend to read very little beyond what's required for completing assignments*) which could be associated more strongly (scored negatively) with interest in the subject and a willingness to devote spare time to finding out more about topics of interest, than with a desire to have the boundaries of the subject clearly demarcated. This ambiguity of interpetation is reinforced by a consideration of the rotated factor structure (correlation) matrix where this item is correlated with no less than six of the eight factors. The nature of these correlations support the retention of this item within the broader reproducing orientation, but seem to indicate that its ability to measure the construct **syllabus-boundness** must be called into question.

Again, the evidence from this replicative study, by virtue of the exploratory nature of the factor analytic techniques employed, can do no more than suggest that the validity of this item warrants further investigation.

Strategic approach (items 20, 18, 37, 45)

This sub-scale has the lowest reported Cronbach Alpha value (0.32) of any of the sub-scales (ibid, p 230) and all the items have item-scale total correlations between 0.16 and 0.18 (ibid, p 230). It would appear that this is one of the weakest empirical groupings of items in the entire Inventory. Yet examination of the rotated factor pattern shows items 20, 18 and 37 all loading on factor three.

More confusing still is the fact that although three of the items load on a factor which is composed of items from the reproducing orientation, the sub-scale as a whole loads higher on the meaning orientation (see Tables 7 and 8). It would appear that this apparent contradiction can be explained if the rotated factor structure correlations are examined. Here the association of items 20, 18 and 37 is confirmed. In addition items 18, 37 and 45 are correlated with items constituting factor two. However, items 37 and 45 correlate with factor six, which is composed of two items from intrinsic motivation, a sub-scale from the meaning orientation.

This latter association is consistent with the nature of these two items (37: *If conditions aren't right for me to study, I generally manage to do something to change them.* 45: *One way or another I manage to get hold of the books I need for studying*) which could be interpreted by students as implying a strong intrinsic motivation which will attempt to overcome any practical obstacles to studying. The other two items are more directed at the idea of cue-consciousness (Miller & Parlett, 1974) from which this sub-scale was conceptually derived (Entwistle & Ramsden, 1983, p 35) and indicates more clearly the construct that this sub-scale was intended to represent, as shown by the name originally given to this sub-scale, "stategic approach to assessment".

It is thus evident that much of the ambiguity that appears in the interpretation of the results of the factor analysis of **both** the single variables and the summated sub-scales is a function of the ambiguous nature of the construct itself. It fails to demonstrate either a high measure of internal consistency or high item-scale total correlations, and the items themselves are not consistently associated within one orientation.

It is clear that the composition of this sub-scale warrants both conceptual and empirical analysis in the light of the results of both this study and the original study of Entwistle and Ramsden. It might be suggested that the

concept of strategic approach is more adequately measured (and indeed defined) by items which focus on aspects of the student's approach to assessment rather than on more general aspects of studying which could be interpreted as functions of motivation and/or methods of study.

Achievement motivation (items 4, 15, 42, 58)

Three items from this sub-scale are associated in factor seven, namely items 42, 4 and 58. These items all contain an element of competition in their wording, while item 15 is of a more general nature (*It's important to me to do really well in the courses here*) and depends for its conceptual association with the other items in the sub-scale on the ability of students to discern the subtle emphasis on competition implied by the words "to me" in item 15. While this association may be conceptually defensible, it would seem that in the context of an eighty question inventory this subtlety is being missed by students and that this question is being construed in a more general way.

While a consideration of the factor structure cannot give direct evidence to support this contention, nevertheless the apparent ambiguity that surrounds the association of item 15 would give grounds for proposing such an explanation. Item 15 loads on factor three which contains three items from the sub-scale extrinsic motivation which link study success with

career and job opportunities. However, item 15 also loads negatively on factor four which contains three items from the sub-scale **negative attitudes to studying** and two items from **extrinsic motivation** (including one which loads on factor three). This would lend tentative support to the contention that the wording of the item itself might be giving rise to an inconsistent response from the population sample. Unfortunately no further clarity can be obtained from an examination of the rotated factor structure correlations where the picture is almost the same as that indicated by the rotated factor pattern.

It would seem that there is good reason for retaining items 42, 4 and 58 as measuring the construct of **achievement motivation** but that item 15 should be reworded in order to make it more specifically related to the aspect of personal achievement and to remove the possibly ambiguous more general interpretation.

Globetrotting (items 3, 40, 46, 57)

Three of the four items constituting this sub-scale, namely items 3, 57 and 46 are associated with factor two. (It is interesting to note the association of two of these items, items 57 and 46 with two of the items from the sub-scale **achievement motivation** (items 42 and 4), which might indicate that the pathology of globetrotting could be

explained, at least in part, by the influence of a strong competetive desire on the part of the individual. However, this is speculative at this stage, in the absence of any supportive interview data.) Item 3, which is the most weakly associated of the three items, is also the item which has the lowest reported item-scale total correlation, namely 0.13 (ibid, p 232). More positive confirmation of its association with the other two items must await further investigative studies.

The inclusion of item 40 in this sub-scale is open to serious question. This item loads on factor one, which is composed of items from the meaning orientation, and its only correlation is with the same factor. No association can be found between this item and the other items in the sub-scale nor with other items constituting the reproducing or strategic orientation. The content of item 40 (*In trying to understand new topics, I often explain them to myself in ways that other people don't seem to follow*) seems closer to items in the sub-scale **comprehension learning** than to the items constituting the sub-scale **globetrotting** with which it is presently associated. The possibility of the movement of this item from one sub-scale to another receives indirect support from the very low reported item-scale total correlation of 0.16 (ibid, p 232).

It would seem that until further evidence is forthcoming which would support or refute the findings of this present study item 40 should be removed from the sub-scale **globetrotting** and added to the sub-scale **comprehension learning.**

Summary of the conclusions relating to the grouping of items into sub-scales for the ASI

The integrity of the majority of sub-scales is confirmed as far as the exploratory nature of the analyses performed will allow. Certainly for the purposes of employing the sub-scales of the inventory to explore the study orientations of groups of students there is no strong evidence that the sub-scales fail to measure the constructs they are intended to.

The sub-scales **use of evidence, syllabus-boundness** and **achievement motivation** require evidence from other studies to establish the integrity of the item groupings as proposed by Enwistle and Ramsden (ibid). Nevertheless, until such evidence is available, the sub-scales can still be utilised in their present form, based on the conclusions drawn from the present study.

In the case of the remaining three sub-scales, **surface approach, strategic approach** and **globetrotting,** the results of the present study lead to a different conclusion. Therefore any factor analysis of the sub-scales which

produces two factors loading on surface approach should be interpreted with circumspection, as this division may indicate nothing more than the division within the sub-scale itself and not two orientations both exhibiting the full range of characteristics as measured by the six items of the sub-scale. A similar caveat would hold for the interpretation placed on the position of the sub-scale **strategic approach** within any factor structure, since the individual items do not appear to measure a unidimensional construct. In the case of **globetrotting** it appears that this sub-scale is better defined by removing item **40** and including this item in the sub-scale **comprehension learning.**

It is therefore valid to accept the factor structure of the sub-scales, as defined by the original research programme, providing the interpretation of this factor structure bears in mind the reservations expressed above.

GROUPING OF ITEMS INTO SUB-SCALES FOR THE CPQ

The interpretation of the results obtained from the factor analysis of the original items making up the eight sub-scales of the CPQ is made easier by the fact that the sub-scales were not constructed on the basis of a prior model which hypothesised their association (as was the case with the ASI). This means that the contextual constructs that the CPQ is intended to measure are more independent of each other than is the case with the constructs of the ASI. The use of factor analysis in the development of the Questionnaire (Entwistle & Ramsden, 1983 p 126) would have ensured that the association of items within sub-scales in the presence of all other items should have been clarified.

The care taken in the development of the CPQ is evidenced by the high measures of internal consistency (Cronbach Alpha) obtained for each of the sub-scales. All are above 0.65 (ibid, p 238-240). Similarly, the corrected item scale correlation totals are consistently higher than those obtained for the ASI. Only two items have values below 0.20, and only three have values between 0.20 and 0.30 (ibid, p 238-240).

Our replicative analysis largely confirms the composition of the eight sub-scale groupings (see Table 12). Factor one

contains all five items from each of the three sub-scales **openness to students, good teaching** and **freedom in learning.** This is consistent with the findings of Entwistle and Ramsden (1983, p 185).

Factor two contains all five items from the sub-scale **workload.** It is interesting, and perhaps significant that this is the only sub-scale which occurs as a separate factor, which might indicate the strength of student perceptions about this aspect of the departmental context.

Factor three contains all five items from the sub-scale **vocational relevance** as well as three items from the sub-scale **clear goals and standards.**

Factor five contains four of the items from the sub-scale **social climate.** The only item which is not retained in this factor is item 29 (*This department organizes meetings and talks which are usually well attended*) which loads on factor one. It may be that this item is perceived as being an extension to the concept of good teaching, but since there is a weak association between this item and factor three, on which item 37 of this sub-scale also loads, there is not really enough empirical evidence for removing item 29 from the sub-scale. Its low reported item-scale total correlation value of 0.25 (ibid, p 240) would, however,

indicate that the place of this item warrants further investigation.

The integrity of two sub-scales, is not retained. These are **clear goals and standards** and **formal teaching methods.** As mentioned previously, three items from the sub-scale **clear goals and standards** load on factor three, and the remaining two item load on factor four (item 12 loads on both factors). There is a high correlation between these two factor (see Table 12), and the loading of item 12 on both these factors provides some support for retaining the conceptual association of the items in this sub-scale.

The retention of the sub-scale **formal teaching methods** in its present form is more difficult to justify on the purely empirical evidence of the factor analysis. Two items from this sub-scale, (items 1 and 17) load on factor two which is the sub-scale **workload.** In addition these two items also load on factor three which is composed of items from the sub-scales **vocational relevance** and **clear goals and standards.**

The remaining three items, (items 9, 33 and 25) load on factor four. The inter-factor correlation shows factor four positively correlated with factor three and negatively correlated with factor two. It is difficult, therefore, on the basis of purely empirical evidence to decide on the

grouping of the five items that constitute this sub-scale. On the basis of conceptual analysis it would appear that items 1 and 17, which both deal with the amount of time that has to be devoted, directly and indirectly, to studying within the department (1: *A great deal of my time is taken up by timetabled classes [lectures, practicals, tutorials, etc].* 17: *In this department you're expected to spend a lot of time studying on your own*) could be associated with the concept of perceived workload.

The evidence for the integrity of the sub-scale **formal teaching methods** is such that it brings into question the association of items in this sub-scale. However, a more definite answer awaits the results of further investigations.

Summary of the conclusions relating to the grouping of items into sub-scales for the CPQ

It would appear on the basis of the factor analysis of the single variable items of the CPQ that the integrity of all the sub-scales with the exception of **formal teaching methods** is maintained. Further investigation is needed in the case of this sub-scale to establish whether the grouping of items as indicated by the present factor analysis is to be preferred for all populations.

INTERPRETATION OF THE FACTOR STRUCTURE OF THE ASI

If we compare Tables 7 and 8 with the factor structure obtained by Entwistle and Ramsden in the original research programme (Table 9) there are notable similarities and also significant differences.

Two of the original three study orientations , namely **meaning orientation** and **reproducing orientation**, appear consistently in the English and Afrikaans samples with only minor differences (which will be discussed later). However, the composition of these two orientations differs from that reported by Entwistle and Ramsden.

If we first examine the composition of the **reproducing orientation** factor we notice that it is identical for the English and Afrikaans samples. The sub-scales which comprise this orientation closely parallel those of the original **reproducing** and **non-academic orientations** combined. The only difference is the absence of the sub-scale **operation learning** in the present study. There would seem, therefore, to be good grounds, on the basis of the present study, to support the grouping of sub-scales to form the **reproducing orientation** as defined by Entwistle and Ramsden but to question whether the **non-academic orientation** should not be combined with the **reproducing orientation**. It would

be necessary to appeal to the factor structures reported in other similar studies to see whether the two factors should be regarded as separate factors or whether they should be combined. This issue will be examined in the light of other studies in Chapter 5.

More significant is the position of the sub-scale **operation learning** within the factor structure of the Inventory as a whole. In the present study this sub-scale fails to load on the **reproducing orientation** but does load on the **meaning orientation.** This would support the contention of Pask who said that "*understanding* a topic ... involves *both* comprehension learning, which was identified earlier with description building, *and* operation learning, which was identified with procedure building" (Pask, 1976). However, Pask makes the important observation, which has relevance when attempting to interpret the significance of the position of operation learning in the factor structure, that "the comprehension/operation learning distinction is a matter of *degree*" (ibid). Thus the nature of the education provided by the institution (in the case of the present study, career-orientated vocational training) may indicate that the degree of operational learning style required by students in order to reach understanding may be greater than that required by a university.

If we examine the composition of the **meaning orientation** factor, we see, in addition to the difference already noted with respect to the sub-scale **operation learning**, that there is a difference between the factor structure of the English and the Afrikaans samples, and that both structures differ from the structure obtained by Entwistle and Ramsden. All three factor structures share a common set of sub-scales, namely **deep approach**, **relating ideas**, **use of evidence**, **intrinsic motivation** and **strategic approach.** There would appear, on the basis of this study alone, to be good grounds for proposing these sub-scales as providing a core for the **meaning orientation.** Sub-scales which are added to this core might indicate the particular nature of the orientation in the given institutional and cultural context.

Thus, for the English sample in the present study (where the factor structure more closely parallels that of the original study) the inclusion of the sub-scales **comprehension learning** and **achievement motivation** in the **meaning orientation** factor indicates that it is linked with a desire to succeed and that the style that students adopt requires both description building (comprehension learning) and procedure building (operation learning - referred to above).

The Afrikaans sample exhibits a distinctively different composition for the **meaning orientation** factor. In addition to the core sub-scales mentioned above, **achievement**

motivation, operation learning and surface approach load on this factor. It is significant that the loading of operation learning for this sample is considerably higher than for the English sample. This, taken in conjunction with the loading of surface approach on this factor and the absence of the sub-scale comprehension learning would support the view, expressed by many lecturers in higher education, that even those Afrikaans-speaking students who perform well are less able than their English-speaking counterparts to think divergently and rely far more on memorisation.

An additional factor for the ASI emerged for each population sample. For the English sample a factor emerged which links a strategic approach with reproductive methods in order to gain success. This factor is not paralleled in the Afrikaans sample. Instead, a factor emerges in which divergent thinking, an ability to define the parameters of own learning tasks and an inclination to be over-ready to jump to conclusions combine. This factor is negatively associated with self-rated academic performance at the Technikon. Neither of these two factors proves the presence of additional distinctive study orientations. Insofar as they support differences (between English-speaking and Afrikaans-speaking students) which many staff members would intuitively hold to be true, they demonstrate the Inventory's ability to describe the study orientations

of student groups both in universal and in particular terms. They also indicate areas which would warrant further investigation using alternative or complementary methodologies.

Summary of the conclusions relating to the interpretation of the factor structure of the ASI

The present study confirms the presence of the two major study orientations. Each of these orientations is defined by a set of sub-scales which is unique to the population sample, but which shares a common core of sub-scales with the **meaning** and **reproducing orientation** as defined by Entwistle and Ramsden. The division between **reproducing orientation** and **non-academic orientation** was not maintained, and requires examination in the light of other similar studies. In addition, the ability of the ASI to illuminate differences in study orientations between English-speaking and Afrikaans-speaking students is seen as an important attribute of the Inventory.

INTERPRETATION OF THE FACTOR STRUCTURE OF THE CPQ

The factor structure of the CPQ, as it emerges in the analyses of the the English-speaking and Afrikaans-speaking samples, presents a disappointing picture. In both instances the sub-scales are grouped together into one factor which seems to indicate that students perceived the context in terms which, although conceptually distinct (see the analysis of the individual items of the CPQ), are nevertheless all strongly associated.

The only exception to this is the independence of the sub-scale **workload.** This is consistent with the results of the original study. The emergence of another factor in the English sample, consisting of the sub-scales **formal teaching methods** and **clear goals and standards** might indicate that lectures, formal classes, assessment standards and the objectives of assignments are perceived by students as constituting one global aspect of the learning context. However, this factor does not emerge in the Afrikaans sample. It is also considerably more limited in the association of sub-scales than is the **formal-vocational** factor apparent in the original study.

Summary of the conclusions of the interpretation of the factor structure of the CPQ

The association of all the sub-scales of the CPQ, with the exception of the sub-scale **workload**, to form one factor does not support the results of the original research programme and seems to indicate that students, at least in the present study, perceive those aspects of the learning context sampled by the CPQ as being strongly inter-related.

ASSOCIATION BETWEEN THE ASI AND THE CPQ

The greatest potential usefulness of the two instruments for the improvement of teaching and learning in higher education lies in our ability to find associations between the two. In the present study, as in the original study, there is insufficient evidence on the basis of the factor analysis to support the important association between learning context and study orientations. The gathering of data based on interviews with students was not performed in the present study and the question as to whether the administration of the two inventories on their own is of any diagnostic value in terms of teaching improvement must be answered on the basis of empirical evidence alone.

It is disconcerting to find, therefore, that the empirical associations between the two Inventories, which in the original study were suggested by the factor analysis and supported by the interview data, are absent in the two population samples which form the basis for this study. Apart from the association between the sub-scale workload and the reproducing orientation there are no associations between any of the sub-scales of the CPQ and the two main study orientations. Thus we cannot, on the basis of empirical evidence, attribute any explanatory value to the results of the factor analysis of the two Inventories.

Even if we appeal to the factor pattern matrix for the 103 items of the combined ASI and CPQ for the English sample (Table 10) we find that only 4 items of the CPQ are associated with factors which contain items from the ASI, and even these associations provide no explanatory evidence as to the relationships existing between contextual factors and study orientations.

Summary of the conclusions of the interpretation of the association betweeen the ASI and the CPQ

No empirical associations between the CPQ and the ASI can be established with the exception of the association between the sub-scale **workload** and the **reproducing orientation.** This association does not advance our understanding of the influence of contextual factors on study orientations, and the conclusion that we are forced to draw is that the CPQ in its present form does not allow us to explore the relationships between contextual factors and approaches to studying.

CHAPTER FIVE - A COMPARISON BETWEEN THE RESULTS OF THE PRESENT STUDY AND THE RESULTS OBTAINED FROM OTHER STUDIES USING THE APPROACHES TO STUDYING INVENTORY AND THE COURSE PERCEPTIONS QUESTIONNAIRE

At least eight reported studies have been undertaken using either the ASI in its original form or in a modified form (Watkins, 1982; Watkins, 1983; Watkins, 1984; Entwistle & Kozéki, 1985; Watkins & Hattie, 1985; Ramsden et al, 1986; Clarke, 1986; Watkins et al, 1986). Since none of these studies involved the use of the CPQ, nor could other published studies using the CPQ be traced, the ASI and CPQ will be treated in separate sections for the purposes of discussion.

COMPARATIVE STUDIES USING THE ASI

The most extensive range of studies using the ASI has been conducted by David Watkins both in Australia (1983; 1985) and in the Philippines (1984; 1986).

In 1981 Hattie and Watkins investigated study processes using Biggs' Study Process Questionnaire (referred to in Chapter 2), developed in Australia. They found that the division into three factors, namely Utilising, Internalising and Achieving, as proposed by Biggs, was replicated in their study of 255 New South Wales students but was not present in their simultaneous study of 173 Filipino students. Their

conclusion is important in the context of the cross-cultural validation of the Approaches to Studying Inventory:

> "The writers consider that further research is required with a wider range of Filipino and Australian students before it is possible to determine if the results of this study are a reflection of true linguistic, educational, or personological differences between students of these countries or are simply attributable to sampling error. ...Additional evidence is thus required to investigate to what extent the SPQ is country bound..." (Hattie & Watkins, 1981).

Watkins and Hattie (1981) and Watkins (1982a) continued investigations using Biggs' SPQ and also Entwistle and Ramsden's Approaches to Studying Inventory. Watkins (1982b) used the ASI in a study of 540 Australian National University students. One of the main aims of this study was to establish whether the "study process dimensions of these Australian students, as evidenced by second-order factor analysis of the ASI, resemble those proposed by Ramsden and Entwistle" (Watkins, 1982b). His findings were important in two areas.

Firstly, he reports a slightly different factor structure to that proposed by Ramsden and Entwistle (1981). He states:

> "The results of this study ... have cast doubt on the validity of the meaning/reproducing/achieving model of the study process domain espoused by Entwistle and Biggs." (ibid, 1982b)

Secondly, he queries the role of achievement motivation which was not evidenced by the results of his study.

Watkins' concern to establish the validity of the factor structure is evidenced in his study of 292 Australian National University students enrolled in the faculties of Arts, Science and Economics (1983). Factor analyses of the results for each faculty showed little variation between faculties, confirming that the factor structure (shown in Table 13) was stable for the given population. His comments on this structure are significant in the light of our own study:

> "This research has added overall support to the concept of a meaning/reproducing/achieving model of the study process complex as advocated by Entwistle and Biggs but once again casts some doubt on the precise nature of the factor structure underlying the 'Approaches to Studying' inventory." (ibid, 1983 [our emphasis])

He makes a further observation which calls into question the integrity of the sub-scale groupings:

> "There is also a need to consider whether faculty differences found in research with this inventory are due to the nature of the particular items. This seems important as the work of Ramsden (1979) indicates that the concepts of 'deep' and 'surface' may mean different things to Arts and Science students. Possible differences in factor structure between faculties should also be further examined." (ibid, 1983 [our emphasis])

TABLE 13

Results of oblique factor analysis of "Approaches to Studying" scales (n=292)

	FACTORS		
INVENTORY SCALES	I	II	III
Approaches to studying			
Deep approach	69	24	-32
Relating ideas	63		
Use of evidence	48	35	-30
Intrinsic motivation	76		-37
Surface approach	-32	43	46
Syllabus-boundness	-58	38	38
Fear of failure			48
Extrinsic motivation	-47	28	26
Strategic approach		51	
Disorganised study methods	-20		62
Negative attitudes to study	-42		57
Achievement motivation		34	
Comprehension learning	52	-22	
Globetrotting			52
Operation learning		64	
Improvidence		43	45

Decimal points and loadings less than ,20 have been omitted.

(Adapted from Watkins, 1983)

In 1985 Watkins reported a longitudinal investigation conducted on 370 of the 540 students who participated in his 1982 study (Watkins & Hattie, 1985). This investigation confirmed that his proposed factor structure (see Table 14) was invariant over a two year period and led him to make the following statement:

> "Analysis using McDonald's invariant factor model both supported the validity of the first author's suggested factor structure for the ASI and the invariance of this factor structure over time. Cross-validation also supported the first author's factor model rather than that proposed by Entwistle and Ramsden. Of course, it is not surprising that different factor structures may emerge from analyses of students from different countries. However, it does throw some doubt on the motivation/strategy model of learning processes espoused by Biggs and Entwistle at least for Australian students. (ibid, 1985 [our emphasis])

Other reported studies have used the ASI at secondary level (Entwistle & Kozéki, 1985) and have used the shortened version (Watkins, 1984; Watkins et al, 1986). A recent study (Clarke, 1986) employed a modified form of the ASI (designated Approaches to Learning Inventory) for use with medical students at the University of Newcastle, New South Wales. Modifications were limited to the rephrasing of questions to make them more relevant to medical students' activities and the addition of 16 further items (these 16 items were not included in the analysis, so comparison with the ASI is possible).

TABLE 14

Rescaled factor loadings of the invariant model.

	FACTORS			
VARIABLES	I	II	III	IV
Approaches to Studying				
Deep approach	76			
Relating ideas	69			
Use of evidence	60			
Intrinsic motivation	44			36
Surface approach		52	46	
Syllabus-boundness		25	37	
Fear of failure		53	28	
Extrinsic motivation				92
Strategic approach	25		36	
Disorganised study methods		46		
Negative attitudes to study		56		
Achievement motivation				20
Comprehension learning	62			
Globetrotting		63		
Operation learning			59	
Improvidence		50	48	

(Rescaled factor loadings obtained by dividing factor loadings by standard deviations at time 1.)

(Watkins & Hattie, 1985)

The Approaches to Learning Inventory was administered to 153 medical students. The results of factor analysis with oblique rotation undertaken on the sub-scale scores is given in Table 15. Clarke also tabulated the factor structures obtained from previous studies for comparative purposes (see Table 16). (His summary has been expanded to include the groupings provided by Watkins and by ourselves.)

CONCLUSIONS BASED ON COMPARATIVE STUDIES USING THE ASI

If we attempt to bring together the results of comparative studies using the ASI and the findings of this present study we can draw the following conclusions.

1. There is empirical support from a variety of different sources for the existence of conceptually distinct orientations to study. The exact nature and number of these orientations is not clear at this stage, although two orientations, namely **meaning orientation** and **reproducing orientation** do appear consistently, although in slightly modified forms, in all the reported studies (see Table 16).

2. The factor structure which defines the main orientations is different for different population samples. Watkins (1985) holds the view that this is to be expected. However, Entwistle and Kozéki, in discussing the value of their cross-cultural study of secondary education, using a

TABLE 15

Factor loadings of Approaches to Learning Sub-scales (n=153)

	FACTORS			
SUB-SCALES	I	II	III	IV
Approaches to studying				
Deep approach	77			
Relating ideas	74			
Use of evidence	74			
Intrinsic motivation	76			
Surface approach		35	62	
Syllabus-boundness	-43		56	28
Fear of failure		56		-25
Extrinsic motivation				66
Strategic approach		-55	32	28
Disorganised study methods		72		
Negative attitudes to study		63		
Achievement motivation				75
Comprehension learning	59	36	-39	
Globetrotting		68		
Operation learning			78	
Improvidence		30	70	

Decimal points and loadings less than ,25 have been omitted.

(Adapted from Clarke, 1986)

TABLE 16 Systems for grouping sub-scales into orientations

RAMSDEN (1984)	WATKINS & HATTIE (1985)	CLARKE (1986)	PRESENT STUDY (ENG.) (1987)	PRESENT STUDY (AFRIK.) (1987)
Meaning Orient.	Meaning Orient.	Academic Orient.	Meaning Orient.	Meaning Orient.
DA	DA	DA	DA	DA
RI	RI	RI	RI	RI
UE	UE	UE	UE	UE
IM	IM	IM	IM	IM
	CL	CL	CL	SA
	ST		ST	ST
			AM	AM
			OL	OL
Reprod. Orient.	Reprod. Orient.	Non-Academ. Orient.	Reprod. Orient.	Reprod. Orient.
SA	SA	SA	SA	SA
SB	SB	SB	SB	SB
FF	FF	IP	FF	FF
IP	DS	OL	DS	DS
	NA		NA	NA
	GL		GL	GL
	IP		IP	IP
			EM	EM
Non-Academ. Orient.		Negative Orient.		
DS		DS		
NA		NA		
GL		GL		
		FF		
		ST(-)		
Strategic Orient.	Strategic Orient.	Achieving Orient.	Strategic Orient.	
AM	SA	AM	SB	
EM	SB	EM	EM	
ST	ST		ST	
	OL		OL	
	IP			
Styles of Learning				Explor. Orient.
CL				CL
OL				RI
				GL
				SB(-)

(Adapted from Clarke, 1986)

modified version of the ASI, postulate a different view. They state that cross-cultural studies are important in separating out the psychological 'universals' from those aspects which are limited to the particular social setting of the study (Entwistle & Kozeki, 1985).

It would appear that both the above views are supported by the results of the reported studies. None of the studies is able to confirm the existence of all postulated orientations universally defined in terms of constructs represented by the sub-scales of the ASI. It would seem, rather, that the orientations which appear consistently are defined differently for different populations. (Subsequent studies may assist in arriving at a more universal definition of the consistently occurring orientations or may support their unique definition for each new population sample.)

3. Some groupings of sub-scales are more consistent than others. From Tables 7, 8, 9, 12, 13, 14 and 15 it is evident that the *meaning orientation* is consistently made up of a core of sub-scales, namely:

deep approach
relating ideas
use of evidence
intrinsic motivation
comprehension learning

This would seem to indicate that the constructs measured by these sub-scales are experienced by students in different contexts in the same way. This conclusion is supported by the evidence from the factor analysis of the individual items of the ASI (Table 10), discussed in Chapter 4.

4. Constructs whose sub-scale integrity has not been maintained, **surface approach**, **achievement motivation** and **strategic approach** are largely those which demonstrate inconsistent associations in the factor structures reported. This would support the contention that either these constructs are inadequately defined by the existing item groupings or that some of the items which define these constructs are interpreted differently by different student populations. Since no other reported studies have subjected the original ASI items to factor analysis it is impossible at this stage to do more than posit these possibilities. [It is significant that a reported investigation of the internal structure of Biggs' SPQ conducted in Britain (O'Neil & Child, 1984) using factor analysis suggested a similar phenomenon. The SPQ has three dimensions each made up of a sub-scale measuring motivation and one measuring strategy. Each sub-scale is composed of seven items. O'Neil and Child subjected the results of their administration of the SPQ to 245 English polytechnic students to the same factor analytic procedures as had Biggs in two previous studies. It is significant that when the

factor analyses of the individual items are compared for the three studies they are almost identical. One sub-scale preserved six out of seven items, two sub-scales preserved five items, two sub-scales preserved four items and the remaining sub-scale exhibited no consistent items at all.

This study would lend weight to the contention that items within sub-scales cannot be assumed to be consistently associated unless they can be shown to be in a number of different studies.]

CONCLUSIONS BASED ON COMPARATIVE STUDIES USING THE CPQ

As stated at the beginning of this chapter, no studies using the CPQ have been traced apart from Ramsden's further analysis of the results of the research programme involving 2208 university and polytechnic students (Ramsden, 1983).

The conclusions that we are forced to draw must, therefore, be based on the analysis of the present study and the absence of any subsequent employment of the Questionnaire.

1. Factor analysis confirmed the integrity of the sub-scales of **good teaching, openness to students, workload and vocational relevance.** Although the other sub-scales were not as well preserved there were strong associations between individual items within sub-scales (Table 10). This would tend to support the theoretical division into discrete sub-scales since the contextual aspects that are being sampled are distinct global attributes of the departmental context.

2. The **usefulness** of the CPQ in adequately describing the perceived (departmental) context in which student learning takes place is called into question. Both the absence of any subsequent investigations utilising the CPQ and our own failure to find meaningful or explanatory associations between the contextual parameters sampled by the CPQ and the

approaches to studying adopted by students (as measured by the ASI), would support this contention. Those associations which are evidenced by the factor pattern are those that are largely self-evident.

Workload is strongly and consistently associated with a reproducing orientation (however that orientation is defined in terms of the factor structure). The only other associations that appear from an examination of the factor pattern are idiosynchratic to the population sample and the factor structure of the ASI for the given population (see Tables 7 and 8). As in the original study (Entwistle & Ramsden, 1983) **no clear association between any of the sub-scales and the meaning orientation could be obtained.**

3. Since the value of the CPQ in terms of explaining the orientations to studying adopted by students lies largely in the support obtained from the **interview** data, it would appear that the CPQ on its own (ie. unsupported by interview data) is of very limited value. It is unable to provide a comprehensive picture of the contextual factors which influence students in terms of the study orientations that they adopt.

One possible explanation of this is that the CPQ addresses only a very limited number of contextual variables, and those that are addressed are aggregated into self-evident

conceptual groupings (sub-scales) which examine only the most visible aspects of the learning context.

4. Further use of the CPQ in its present form does not appear to be justified since the information that it provides is severly limited. However, support for the influence of contextual factors on students' approaches to studying is provided from other sources (Entwistle & Ramsden, 1983; Ramsden, 1983; Ramsden et al, 1986). These, and other sources, rely largely on the use of interview data, and Ramsden goes so far as to state that he doubts whether questionnaires can effectively explore the influence of contextual factors:

> "Examination of the relationship between perceptions of learning environments and students' approaches to learning cannot, however, be carried out effectively by means of questionnaires alone. The course perceptions questionnaire provides a broad but general picture of learning contexts and their components: in order to approach the fine detail of an individual student's interaction with his environment, and to ensure that the dimensions identified above really are ways in which students in different departments characterise and evaluate their learning environments, we need additional methods." (Ramsden, 1979)

This view is supported by the evidence obtained in the present study. However, it is the author's view that the above criticism is largely a function of the type and nature of the questionnaire used rather than the inability of questionnaires per se to provide the information that is desired.

5. It has been emphasised that the association that is provided between aspects of the learning context and the approaches to studying adopted by students is provided almost entirely by interview data. Since it is not practically possible to replicate this aspect of the original research programme whenever the SPQ is administered, and since the relationships are not apparent from the statistical analysis of the results, it is not possible to generalise the relationships that have been proposed, nor to validate these relationships for other population samples. This obvious limitation restricts the generalised use of the SPQ. This contention is supported by the lack of published studies which have employed the SPQ.

SUMMARY

It is of note that the findings of the present study, which differ in a number of significant aspects from the definitive study conducted by Entwistle and Ramsden (1983), are consistent in most respects with the findings of subsequent studies undertaken using different student populations. The size of the sample employed in the present study, which compares favourably with the original sample, must lend considerable support to the conclusions arrived at by other researchers.

CHAPTER SIX - CONCLUSIONS CONCERNING THE USEFULNESS OF THE APPROACHES TO STUDYING INVENTORY AND THE COURSE PERCEPTIONS QUESTIONNAIRE

On completion of the present study, and having compared the results obtained with other comparative studies, we are in a position to draw some conclusions regarding the usefulness of the two instruments employed, to pose questions relating to certain aspects of the research methodolgy and to highlight areas which warrant further investigation.

CONCLUSIONS CONCERNING THE USEFULNESS OF THE ASI

On the basis of the conclusions of Chapters 4 and 5 we are in a position to confirm the ability of the Approaches to Studying Inventory to produce meaningful and conceptually consistent results. However, the original grouping of sub-scales into three or four orientations universally descriptive of characteristic approaches to studying adopted by students in different institutional environments has not been supported. Instead, two orientations have consistently appeared, meaning orientation and reproducing orientation, which are defined by a core of sub-scales, with the addition of other sub-scales which are characteristic of the population sample. In addition, certain descriptive orientations occur for different

population samples. This does, to a certain extent, limit the generalisability of the findings of the original and all subsequent studies, until we have sufficient studies to determine whether each population produces a different factor pattern for the ASI, or whether populations can be grouped together into a number of categories.

On the basis of the studies conducted using the ASI, it would be valid to replicate the reported results of the original interview data concerning the two main orientations to other population samples. However, researchers wishing to utilise the ASI together with other instruments (for example, to explore contextual factors from a different perspective) should first establish the nature of the factor pattern before assuming that the orientations proposed by Entwistle and Ramsden are valid for that particular population.

On the basis of our factor analysis of the individual items of the ASI it appears that most of the sub-scales retain sufficient integrity to allow for their continued use in their present form. However, the interpretation placed on the association of the sub-scales surface approach, strategic approach and globetrotting should be seen in the light of the findings relating to these sub-scales dealt with in Chapter 4.

On the basis of the results of our study and other reported studies the usefulness of the ASI as an instrument which greatly contributes, not only to our theoretical understanding of the way in which students in higher education approach studying, but also allows us to measure these approaches in conceptually coherent and meaningful ways is confirmed. The adequacy of the ASI, both in its description of the range of study orientations found amongst students and in its definition of these orientations, is a question which will be addressed later in this Chapter.

CONCLUSIONS CONCERNING THE USEFULNESS OF THE CPQ

On the basis of the purely (quantitative) empirical evidence obtained from our study we are forced to conclude that the CPQ in its present form is of no value in demonstrating relationships between contextual factors and study orientations. Because of the differing factor patterns for the ASI obtained in this study (and in other studies) it is also not possible to generalise on the basis of the interview data from the original study, which supported and to a large extent established the relationships between the ASI and the CPQ. This does not mean that the information obtained from the interviews is not valid, nor that this is not a legitimate and useful methodology to explore the factors influencing student learning in higher education. It implies only that this information is not directly

transferrable without empirical justification. That justification has not been forthcoming in the present study, nor could other studies be found which provided this justification. We must regretfully conclude, therefore, that exploration of the influence of contextual factors on student learning using the CPQ is not productive.

PROBLEMS ASSOCIATED WITH THE DEVELOPMENT AND THE CONCEPTUAL STRUCTURE OF THE ASI

1. There is a need to address the question as to whether the constructs, which are regarded as separate (although inter-related) entities, have a factual existence in terms of describing psychological structures of thought or are simply endowed with this factual existence by the researchers. This is an important distinction, and one which is made by Marton himself (Marton, 1981) when criticising the concepts developed by Piaget to explain the psychological stages through which children develop. He makes the point that the transition from using descriptions to establish formal similarities to that of endowing these similarities with a common psychological entity is a very significant one. "The assumption about the acquired (or rather, constructed), general structure implies empirically testable corollaries"(ibid). Unless, therefore, we can demonstrate the existence of this general structure, we must consider the descriptions as descriptions of perceptions which are content and context dependent (ibid). In that case one of

our main efforts should be to attempt to extend these descriptions for different contents and different contexts. As Marton says (ibid), "...learning, operatory structures, conceptions as pyschological entities are epistemologically unattainable independent of context and content".

While his statement is made in the context of the characterisation of individuals in terms of fixed psychological categories, it is equally valid when applied to groups of students and attempts to characterise them in terms of universal psychological concepts. This problem has been expressed, although in different terms, by Entwistle and Ramdsen when they say:

> Qualitative analysis of the interview data ... confirmed the importance of the fundamental differences between deep and surface approaches. Although the distinction was seen to apply to many subject areas, it had to some extent to be reinterpreted within contrasting academic contexts. In other words, the meaning of the concepts subtly shifts in relation to different disciplines. In Science deparments a deep approach involves considerable emphasis on detail and procedures, and may even require a preliminary stage of rote learning difficult to distinguish from a surface approach. In humanities and social sciences, we saw how personal reinterpretation, related especially to experience of the world of people rather than things, was most important in carrying out a deep approach.
>
> (Entwistle & Ramsden, 1983 p 194 [our emphasis])

Given that the descriptions which formed the basis for the definition of conceptual categories (in terms of the items employed in the ASI to measure these concepts) were derived from a distinct population are we correct in assuming that

these definitions are universally perceived in different contexts? Put more simply, can we say that the concepts are universally defined in terms of the items that Entwistle and Ramsden have chosen as measuring these concepts, or are the concepts defined differently for each different population and context? If this were so, it would partially account for the differences in the first-order factor structure obtained in our study as well as the differences in the second-order factor structure obtained in other studies (given that the second-order factor structure is dependent on the validity of the assumed first-order structure).

2. It is possible that some of the constructs are universal and stable and that others are transient and contextually defined. This possibility, which is a modification of the conclusion arrived at as a consequence of the criticisms highlighted in 1 above, is supported by our factor analysis of the single variable items. In this analysis those sub-scales whose integrity was preserved were those sub-scales which were consistently associated within the two main study orientations. Those sub-scales whose integrity was called into question by the analysis of our results were those whose associations in other studies have been inconsistent.

3. The composition of the main study orientations based on the factor analysis of the sub-scales does not support the

underlying model of learning and studying proposed by Entwistle and Ramsden (see Figure 1). While it is accepted that such a model is an attempt to simplify reality, it would appear that it is inadequate to accommodate the differences in the factor structures of the different orientations that have emerged in subsequent studies. It is necessary to examine the model again in the light of this to determine whether such a model is in fact appropriate in guiding our interpretation at the present stage of our understanding.

4. The orientations, as they appear from the factor analyses of different studies, are not homogeneous in terms of the range of concepts contained within each. By contrast, Biggs' Study Process Questionnaire attempts to define the three major dimensions (utilising, internalising and achieving) in consistent terms. Each dimension contains a component of motivation and strategy. The ASI, however, defines the main orientations in conceptually different terms. Thus the meaning orientation has approach, method, motivation, style, while the the reproducing orientation has approach, motivation, additional features of motivation, study habits and learning pathology. A strategic approach, if present, has only motivation and approach.

It would seem that there is a major deficiency here. If we accept that such constructs as approach, strategy,

motivation, style, learning pathology are legitimate categories of description (not necessarily factual psychological constructs) then we have to ask whether these categories have been explored sufficiently from the perspective of the learner to define the boundaries of the outcome space for each category. It is not possible to answer this question from the quantitative perspective of this research study, but it is a question that is legitimately raised by the factor analysis of the results.

PROBLEMS ASSOCIATED WITH THE DEVELOPMENT AND THE CONCEPTUAL STRUCTURE OF THE CPQ

1. It has been shown that the sub-scales of the CPQ associate together into one factor and that there are no empirical associations between this factor, or any of the sub-scales of the CPQ with the exception of the sub-scale workload, and the study orientations that appear in the ASI. The major reason for this appears to be that the sub-scales are so global in their nature that they provide little real insight into the complexity of the learning context. In addition they are only the highly visible, largely self-evident categories of perception that have been identified by researchers adopting a first-order approach to the problem of describing context. These would naturally be confirmed by a second-order methodology, but unless the methodology was specifically designed to accomplish this, the range of contextual factors would not be significantly

extended because the boundaries had been predetermined by the researchers.

2. Because of the methodology adopted to formulate the sub-scale categories, the CPQ appears to be totally inadequate in describing the full range of contextual factors which might influence the study orientation adopted by students. In order to explore this range it is necessary to adopt a second-order methodology which will ask students to identify aspects of the context of which they are perceptually aware without necessarily categorising these in advance. Since the methodology is essentially exploratory and revelatory the conceptual groupings of items, if such groupings exist, will take place only after the full range of items has been identified.

3. The results obtained from the CPQ, even in the original study by Entwistle and Ramsden (1983), do not advance our understanding of the complex relationships existing between contextual factors and approaches to studying adopted by students to the extent that is necessary if we are to effect changes to the context or perceptions of it which might produce resultant desired changes to students' approaches to learning. To say that a lack of freedom, poor teaching and inappropriate assessment methods (ibid, p 208) have an adverse effect on the quality of student learning is to say what is self-evidently true to nearly all teachers involved

in higher education. However the coarseness of the perceptual "grain" is such that this insight is unable to tell us what to do about putting the matter right.

This is surely a problem of the instrument itself and not of the attempt to link contextual factors to student learning with a view to bringing about positive change. By limiting contextual factors to largely self-evident global descriptions we are similarly limiting our ability to intervene and to bring about desired change in the context of teaching and learning.

The forty questions of the Questionnaire measure perpections of only eight aspects of the context, and by the very nature of the Questionnaire there is a high degree of repetition because of the general nature of the items. It is highly probable that large aspects of the learning context are not being sampled and that these less obvious and less visible aspects are those whose effect on the approaches to studying adopted by students may be the most rewarding to explore.

4. There is a very real danger that the concentration on broad and obvious categories with which to describe the learning context may create the impression that relationships between contextual factors and approaches to studying are both limited and simple. That the richness of the interview data does not necessarily support this limited

and simple view does not nullify the impression created by the CPQ itself and the empirical results obtained from its administration in conjunction with the ASI. It is essential that researchers and, in particular, teachers in higher education do not lose sight of the complex nature of the inter-relationships between these factors. The CPQ may be counterproductive in this regard.

AREAS REQUIRING FURTHER RESEARCH

A number of areas for further research have been identified from the problems experienced with the two inventories and also from the factor analyses performed in replicating the statistical procedures employed by Entwistle and Ramsden.

1. In order to answer some of the questions raised concerning the conceptual grouping of items into sub-scales for the ASI we need information from different populations concerning the factor structure of the single variable items. This information, which is presently lacking, would enable us to establish whether the item groupings as proposed by Entwistle and Ramsden are universally applicable, whether other groupings are more empirically and conceptually defensible, or whether the items are interpreted differently by different populations so that the same concepts are defined by different groupings of items for different population samples. This is a fundamental

question which affects the usefulness and the validity of the ASI.

2. In conjunction with the first-order factor analysis of the items of the ASI we need many additional replicative studies of the second-order factor structure using different population samples. This will bring us closer to a universal definition of the sub-scales comprising the main orientations (if such a universal definition exists). We will then be in a position to use the ASI with confidence in many more different situations.

3. There is a need to explore, and possibly reformulate, the model on which the ASI is based (see Figure 1) in order to develop more homogeneous and consistent theoretical descriptions of the empirically established study orientations. For example, the process defined by the sub-scale **use of evidence** in the meaning orientation, is not paralleled by a similar process in the reproducing orientation. It may well be necessary, using the same methodology as was adopted in the original research programme, to attempt to extend the range of processes (or at least to generate items which will measure the full range of processes) associated with the different study orientations. A similar observation could be made about the range of approaches (particularly surface and strategic approach) and motivations. In the light of our developing

understanding of the associations between sub-scales there is a need to return to the original methodological perspective and explore areas, such as those highlighted above, which may have been neglected or at best poorly explored because of the constraints placed upon the original research programme by the proposed model of student learning.

4. There is a need to exlore the context of learning from a second-order perspective. The methodology employed to establish the conceptual boundaries of the CPQ was essentially from a first-order perspective (see Chapter 2) which was complemented by student interviews which confirmed the constructs selected to define the learning context as measured by the CPQ. The individual items themselves were generated by students, but not the conceptual categories which these were meant to reflect. Thus the picture that emerged of the learning context was deficient and incomplete, as readily acknowledged by Ramsden himself (Entwistle & Ramsden, 1983 p 130). He has argued in a recent article (Ramsden, 1987) that research needs to adopt a relational approach which seeks to acknowledge the uniqueness of the relationship between content, context and student. This he sees as a holistic approach, in contrast to the approach which seeks for universal content and context-free "laws" which is part of a reductionist approach.

As an area of further research he cites the possibility of bringing together the holistic and reductionist approaches using "some kind of systems theory ... or multi-dimensional model" (ibid). This would seem a fruitful area to explore in that it would avoid the rather simplistic descriptions of context (such as that provided by the CPQ) as well as providing findings that are capable of more general application than those obtained by purely naturalistic research methodology. Such an approach could only be pursued from a second-order perspective and so would be in keeping with the rationale underlying much of the research associated with the search for contextual factors associated with distinctive study orientations. A research programme of this nature is presently under way at the University of Cape Town.

APPENDIX A

APPROACHES TO STUDYING INVENTORY - SUB-SCALE GROUPINGS

DEEP APPROACH

ASI 24 (da) I generally put a lot of effort into trying to understand things which initially seem difficult.

ASI 10 (da) I often find myself questioning things I hear in lectures or read in books.

ASI 5 (da) I usually set out to understand thoroughly the meaning of what I am asked to read.

ASI 34 (da) When I'm tackling a new topic, I often ask myself questions about it which the new information should answer.

RELATING IDEAS

ASI 2 (ri) I try to relate ideas in one subject to those in others, whenever possible.

ASI 29 (ri) In trying to understand new ideas, I often try to relate them to real life situations to which they might apply.

ASI 50 (ri) I need to read around a subject pretty widely before I'm ready to put my ideas down on paper.

ASI 56 (ri) I find it helpful to 'map out' a new topic for myself by seeing how the ideas fit together.

USE OF EVIDENCE

ASI 38 (ue) In reporting practical work, I like to try to work out several alternative ways of interpreting the findings.

ASI 33 (ue) I am usually cautious in drawing conclusions unless they are well supported by evidence.

ASI 54 (ue) Puzzles or problems fascinate me, particularly where you have to work through the material to reach a logical conclusion.

ASI 60 (ue) When I'm reading an article or research report, I generally examine the evidence carefully to decide whether the conclusion is justified.

INTRINSIC MOTIVATION

ASI 39 (im) My main reason for being here is so that I can learn more about subjects which really interest me.

ASI 47 (im) I find that studying academic topics can often be really exciting and gripping.

ASI 55 (im) I spend a good deal of my spare time in finding out more about interesting topics which have been discussed in classes.

ASI 63 (im) I find academic topics so interesting, I should like to continue with them after I finish this course.

SURFACE APPROACH

ASI 16 (sa) Lecturers seem to delight in making the simple truth unnecessarily complicated.

ASI 41 (sa) I find I have to concentrate on memorising a good deal of what we have to learn.

ASI 30 (sa) When I'm reading I try to memorise important facts which may come in useful later.

ASI 48 (sa) The best way for me to understand what technical terms mean is to remember the text-book definition.

ASI 19 (sa) I usually don't have time to think about the implications of what I have read.

ASI 36 (sa) Often I find I have to read things without having a chance to really understand them.

SYLLABUS-BOUNDNESS

ASI 9 (sb) I like to be told precisely what to do in essays or other assignments.

ASI 25 (sb) I prefer courses to be clearly structured and highly organised.

ASI 52 (sb) I tend to read very little beyond what's required for completing assignments.

FEAR OF FAILURE

ASI 12 (ff) The continual pressure of work - assignments, deadlines and competition - often makes me tense and depressed.

ASI 26 (ff) A poor first answer in an exam makes me panic.

ASI 53 (ff) Having to speak in tutorials is quite an ordeal for me.

EXTRINSIC MOTIVATION

ASI 7 (em) I chose my present courses mainly to give me a chance of a really good job afterwards.

ASI 22 (em) My main reason for being here is that it will help me to get a better job.

ASI 32 (em) I generally choose courses more from the way they fit in with career plans than from my own interests.

ASI 35 (em) I suppose I am more interested in the qualifications I'll get than in the courses I'm taking.

STRATEGIC APPROACH

ASI 20 (st) Lecturers sometimes give indications of what is likely to come up in exams, so I look out for what may be hints.

ASI 18 (st) When I'm doing a piece of work, I try to bear in mind exactly what that particular lecturer seems to want.

ASI 37 (st) If conditions aren't right for me to study, I generally manage to do something to change them.

ASI 45 (st) One way or another I manage to get hold of the books I need for studying.

DISORGANISED STUDY METHODS

ASI 1 (ds) I find it difficult to organise my study time effectively

ASI 14 (ds) My habit of putting off work leaves me with far too much to do at the end of term.

ASI 17 (ds) Distractions make it difficult for me to do much effective work in the evenings.

ASI 28 (ds) I'm rather slow at starting work in the evenings.

NEGATIVE ATTITUDES TO STUDYING

ASI 23 (na) Often I find myself wondering whether the work I am doing here is really worthwhile.

ASI 8 (na) Continuing my education was something which happened to me, rather than something I really wanted for myself.

ASI 62 (na) When I look back, I sometimes wonder why I ever decided to come here.

ASI 49 (na) I certainly want to pass the next set of exams, but it doesn't really matter if I only just scrape through.

ACHIEVEMENT MOTIVATION

ASI 4 (am) I enjoy competition: I find it stimulating.

ASI 15 (am) It's important to me to do really well in the courses here.

ASI 42 (am) It is important to me to do things better than my friends, if I possibly can.

ASI 58 (am) I hate admitting defeat, even in trivial matters.

COMPREHENSION LEARNING

ASI 6 (cl) Ideas in books often set me off on long chains of thought of my own, only tenuously related to what I was reading.

ASI 21 (cl) In trying to understand a puzzling idea, I let my imagination wander freely to begin with, even if I don't seem to be much nearer a solution.

ASI 31 (cl) I like to play around with ideas of my own even if they don't get me very far.

ASI 44 (cl) Often when I'm reading books, the ideas produce vivid images which sometimes take on a life of their own.

GLOBETROTTING

ASI 3 (gl) Although I have a fairly good general idea of many things, my knowledge of the details is fairly weak.

ASI 40 (gl) In trying to understand new topics, I often explain them to myself in ways that other people don't seem to follow.

ASI 46 (gl) I often get criticised for introducing irrelevant material into my essays or tutorials.

ASI 57 (gl) I seem to be a bit too ready to jump to conclusions without waiting for all the evidence.

OPERATION LEARNING

ASI 11 (ol) I generally prefer to tackle each part of a topic or problem in order, working out one at a time.

ASI 27 (ol) I prefer to follow well tried approaches to problems rather than anything too adventurous.

ASI 43 (ol) I find it better to start straight away with the details of a new topic and build up an overall picture that way.

IMPROVIDENCE

ASI 51 (ip) Although I generally remember facts and details, I find it difficult to fit them together into an overall picture.

ASI 13 (ip) I find it difficult to "switch tracks" when working on a problem: I prefer to follow each line of thought as far as it will go.

ASI 61 (ip) Tutors seem to want me to be more adventurous in making use of my own ideas.

ASI 59 (ip) I find I tend to remember things best if I concentrate on the order in which the lecturer presented them.

COURSE PERCEPTIONS QUESTIONNAIRE - SUB-SCALE GROUPINGS

FORMAL TEACHING METHODS

CPQ 1 (ft) A great deal of my time is taken up by timetabled classes (lectures, practicals, tutorials, etc.).

CPQ 9 (ft) You can learn nearly everything you need to know from the classes and lectures; it isn't necessary to much further reading.

CPQ 17 (ft) In this department you're expected to spend a lot of time studying on your own.
Scored negatively.

CPQ 25 (ft) Lectures in this department are basically a guide to reading.
Scored negatively.

CPQ 33 (ft) Lectures seem to be more important than tutorials or discussion groups in this department.

CLEAR GOALS AND STANDARDS

CPQ 4 (cg) You usually have a clear idea of where you're going and what's expected of you in this department.

CPQ 12 (cg) It's always easy here to know the standard of work expected of you.

CPQ 20 (cg) It's hard to know how well you're doing in the courses here.
SCORED NEGATIVELY

CPQ 28 (cg) Lecturers here usually tell students exactly what they are supposed to be learning.

CPQ 38 (cg) Lecturers here generally make it clear right from the start what will be required of students.

WORKLOAD

CPQ 6 (wl) The workload here is too heavy.

CPQ 14 (wl) It sometimes seems to me that the syllabus tries to cover too many topics.

CPQ 22 (wl) There is so much written work to be done that it is very difficult to get down to independent reading.

CPQ 30 (wl) There seems to be too much work to get through in the courses here.

CPQ 36 (wl) There's a lot of pressure on you as a student here.

VOCATIONAL RELEVANCE

CPQ 8 (vr) The courses in this department are geared to students' future employment.

CPQ 16 (vr) Lecturers in this department are keen to point out that they are giving us a professional training.

CPQ 24 (vr) The courses here seem to be pretty well determined by vocational requirements.

CPQ 32 (vr) The work I do here will definitely improve my future employment prospects.

CPQ 39 (vr) There seems to be a considerable emphasis here on inculcating the 'right' professional attitudes.

GOOD TEACHING

CPQ 3 (gt) Lecturers here frequently give the impression that they haven't anything to learn from students. **Scored negatively.**

CPQ 11 (gt) Most of the staff here seem to prepare their teaching very thoroughly.

CPQ 19 (gt) Lecturers in this department seem to be good at pitching their teaching at the right level for us.

CPQ 27 (gt) Staff here make a real effort to understand difficulties students may be having with their work.

CPQ 35 (gt) The lecturers in this department always seem ready to give help and advice on approaches to studying.

FREEDOM IN LEARNING

CPQ 2 (f1) There is a real opportunity in this department for students to choose the particular areas they want to study.

CPQ 10 (f1) The department really seems to encourage us to develop our own academic interests as far as possible.

CPQ 18 (f1) We seem to be given a lot of choice here in the work we have to do.

CPQ 26 (f1) This department gives you a chance to use methods of study which suit your own way of learning.

CPQ 34 (f1) Students have a great deal of choice over how they are going to learn in this department.

OPENNESS TO STUDENTS

CPQ 7 (os) Most of the staff here are receptive to suggestions from students for changes to their teaching methods.

CPQ 15 (os) Staff generally consult students before making decisions about how the courses are organised.

CPQ 23 (os) Most of the lectureres here really try hard to get to know students.

CPQ 31 (os) Lecturers in this department seem to go our of their way to be friendly towards students.

CPQ 40 (os) Lecturers in this department generally take students' ideas and interests seriously.

SOCIAL CLIMATE

CPQ 5 (sc) A lot of students in this department are friends of mine.

CPQ 13 (sc) Students from this department often get together socially.

CPQ 21 (sc) This department seems to foster a friendly climate which helps students to get to know each other.

CPQ 29 (sc) This department organises meeting and talk which are usually well attended.

CPQ 37 (sc) Students in this department frequently discuss their work with each other.

Appendix B

APPROACHES TO STUDYING

Please work through the questionnaire carefully, but quickly, giving your immediate reaction to each item. Section A is concerned with background information. Section B contains statements about general approaches to studying and attitudes to various aspects of your work. Section C is related to your experiences of courses in one particular department or subject.

We recognise that this type of questionnaire does not allow you the freedom you might like to give a more personal and fuller reaction to some of the questions raised. So we have provided a space at the end for you to add any comments you feel we should consider.

SECTION A **BACKGROUND DETAILS**

1. SURNAME .....

   FIRST NAME(S) .....

1 - 4

5

2. AGE
   (please circle appropriate code number)

18 or less	1
19 - 21	2
22 - 24	3
25 - 34	4
35 or more	5

6

3. SEX
   (please circle appropriate code number)

Male	1
Female	2

7

4. Did you take Cape Senior Certificate or JMB?
   (please circle appropriate code number)

Cape Senior Certificate	1
JMB	2
Other qualifications	3

8

5. Please give your Senior Certificate or JMB 'scores'.
   Work out your symbol score using the following code.
   Use the symbols of your best FIVE subjects.

(A = 5, B = 4, C = 3, D = 2, E = 1.)

	Symbol	Score
Subject I	.....	.....
Subject II	.....	.....
Subject III	.....	.....
Subject IV	.....	.....
Subject V	.....	.....

Total Score =

9 - 10

6. Which type of course are you taking?

Diploma	1	11
Higher Diploma/ Diploma Tech	2	

7. Year of course. Please do not count any years spent abroad or not following the course.

Year	1	12
Year	2	
Year	3	
Year	4	
Year	5	

8. Which ONE subject or main course are you spending most time on this year?

Accounting	1	13 - 14
Art & Design	2	
Food & Clothing Technology	3	
Languages & Communication	4	
Management	5	
Secretarial Studies	6	
Teacher Training	7	
Architecture & Building	8	
Civil Engineering	9	
Electrical Engineering	10	
Mechanical Engineering	11	
Paramedical & Biological Sciences	12	
Pharmacy	13	
Physical Science & Mathematics	14	
Other(please specify)		

9. How well do you think you are doing so far on this subject/ course, compared to other students?

Badly	1	
Below Average	2	
Average	3	15
Above Average	4	
Very Well	5	

SECTION B **APPROACHES TO STUDYING**

In this section we would like you to show whether you agree or disagree with each of the statements listed below. We are concerned here with your approaches to **studying in general.** If your answer would be different for different subjects, however, you should reply in relation to your main course or subject.

Please circle the number beside each statement which best conforms with your view.

4 (✓✓) means Definitely agree

3 (✓) means Agree with reservations

1 (x) means Disagree with reservations

0 (xx) means Definitely disagree

2 (?) is only to be used if the item doesn't apply to you or if you find it impossible to give a definite answer.

		✓✓	✓	x	xx	?	
1.	I find it difficult to organise my study time time effectively.	4	3	1	0	2	16
2.	I try to relate ideas in one subject to those in others, whenever possible.	4	3	1	0	2	17
3.	Although I have a fairly good general idea of many things, my knowledge of the details is fairly weak.	4	3	1	0	2	18
4.	I enjoy competition: I find it stimulating.	4	3	1	0	2	19
5.	I usually set out to understand thoroughly the meaning of what I am asked to read.	4	3	1	0	2	20
6.	Ideas in books often set me off on long chains of thought of my own, only tenuously related to what I was reading.	4	3	1	0	2	21
7.	I chose my present courses mainly to give me a chance of a really good job afterwards.	4	3	1	0	2	22
8.	Continuing my education was something which happened to me, rather than something I really wanted for myself.	4	3	1	0	2	23

		✓✓ ✓ x xx ?	
9.	I like to be told precisely what to do in essays or other assignments.	4 3 1 0 2	24
10.	I often find myself questioning things I hear in lectures or read in books.	4 3 1 0 2	25
11.	I generally prefer to tackle each part of a topic or problem in order, working out one at a time.	4 3 1 0 2	26
12.	The continual pressure of work - assignments, deadlines and competition - often makes me tense and depressed.	4 3 1 0 2	27
13.	I find it difficult to "switch tracks" when working on a problem: I prefer to follow each line of thought as far as it will go.	4 3 1 0 2	28
14.	My habit of putting off work leaves me with far too much to do at the end of term.	4 3 1 0 2	29
15.	It's important to me to do really well in the courses here.	4 3 1 0 2	30
16.	Lecturers seem to delight in making the simple truth unnecessarily complicated.	4 3 1 0 2	31
17.	Distractions make it difficult for me to do much effective work in the evenings.	4 3 1 0 2	32
18.	When I'm doing a piece of work, I try to bear in mind exactly what that particular lecturer seems to want.	4 3 1 0 2	33
19.	I usually don't have time to think about the implications of what I have read.	4 3 1 0 2	34
20.	Lecturers sometimes give indications of what is likely to come up in exams, so I look out for what may be hints.	4 3 1 0 2	35
21.	In trying to understand a puzzling idea, I let my imagination wander freely to begin with, even if I don't seem to be much nearer a solution.	4 3 1 0 2	36
22.	My main reason for being here is that it will help me to get a better job.	4 3 1 0 2	37
23.	Often I find myself wondering whether the work I am doing here is really worthwile.	4 3 1 0 2	38

		✓✓	✓	x	xx	?	
24.	I generally put a lot of effort into trying to understand things which initially seem difficult.	4	3	1	0	2	39
25.	I prefer courses to be clearly structured and highly organised.	4	3	1	0	2	40
26.	A poor first answer in an exam makes me panic.	4	3	1	0	2	41
27.	I prefer to follow well tried approaches to problems rather than anything too adventurous.	4	3	1	0	2	42
28.	I'm rather slow at starting work in the evenings.	4	3	1	0	2	43
29.	In trying to understand new ideas, I often try to relate them to real life situations to which they might apply.	4	3	1	0	2	44
30.	When I'm reading I try to memorise important facts which may come in useful later.	4	3	1	0	2	45
31.	I like to play around with ideas of my own even if they don't get me very far.	4	3	1	0	2	46
32.	I generally choose courses more from the way they fit in with career plans than from my own interests.	4	3	1	0	2	47
33.	I am usually cautious in drawing conclusions unless they are well supported by evidence.	4	3	1	0	2	48
34.	When I'm tackling a new topic, I often ask myself questions about it which the new information should answer.	4	3	1	0	2	49
35.	I suppose I am more interested in the qualifications I'll get than in the courses I'm taking.	4	3	1	0	2	50
36.	Often I find I have to read things without having a chance to really understand them.	4	3	1	0	2	51
37.	If conditions aren't right for me to study, I generally manage to do something to change them.	4	3	1	0	2	52
38.	In reporting practical work, I like to try to work out several alternative ways of interpreting the findings.	4	3	1	0	2	53

		JJ	J	x	xx	?	
39.	My main reason for being here is so that I can learn more about the subjects which really interest me.	4	3	1	0	2	54
40.	In trying to understand new topics, I often explain them to myself in ways that other people don't seem to follow.	4	3	1	0	2	55
41.	I find I have to concentrate on memorising a good deal of what we have to learn.	4	3	1	0	2	56
42.	It is important to me to do things better than my friends, if I possibly can.	4	3	1	0	2	57
43.	I find it better to start straight away with the details of a new topic and build up an overall picture in that way.	4	3	1	0	2	58
44.	Often when I'm reading books, the ideas produce vivid images which sometimes take on a life of their own.	4	3	1	0	2	59
45.	One way or another I manage to get hold of the books I need for studying.	4	3	1	0	2	60
46.	I often get criticised for introducing irrelevant material into my essays or tutorials.	4	3	1	0	2	61
47.	I find that studying academic topics can often be really exciting and gripping.	4	3	1	0	2	62
48.	The best way for me to understand what technical terms mean is to remember the text-book definitions.	4	3	1	0	2	63
49.	I certainly want to pass the next set of exams, but it doesn't really matter if I only just scrape through.	4	3	1	0	2	64
50.	I need to read around a subject pretty widely before I'm ready to put my ideas down on paper.	4	3	1	0	2	65
51.	Although I generally remember facts and details, I find it difficult to fit them together into an overall picture.	4	3	1	0	2	66
52.	I tend to read very little beyond what's required for completing assignments.	4	3	1	0	2	67
53.	Having to speak in tutorials is quite an ordeal for me.	4	3	1	0	2	68

		✓✓	✓	x	xx	?	
54.	Puzzles or problems fascinate me, particularly where you have to work through the material to reach a logical conclusion.	4	3	1	0	2	69
55.	I spend a good deal of my spare time in finding out more about interesting topics which have been discussed in classes.	4	3	1	0	2	70
56.	I find it helpful to 'map out' a new topic for myself by seeing how the ideas fit together.	4	3	1	0	2	71
57.	I seem to be a bit too ready to jump to conclusions without waiting for all the evidence.	4	3	1	0	2	72
58.	I hate admitting defeat, even in trivial matters.	4	3	1	0	2	73
60.	I find I tend to remember things best if I concentrate on the order in which the lecturer presented them.	4	3	1	0	2	74
61.	When I'm reading an article or research report, I generally examine the evidence carefully to decide whether the conclusion is justified.	4	3	1	0	2	75
62.	Tutors seem to want me to be more adventurous in making use of my own ideas.	4	3	1	0	2	77
63.	When I look back, I sometimes wonder why I ever decided to come here.	4	3	1	0	2	78
64.	I find academic topics so interesting, I should like to continue with them after I finish this course.	4	3	1	0	2	79
						1	80

SECTION C **EXPERIENCES OF YOUR COURSE**

In Section A, we asked you to state which one subject or main course you were spending most time on this year. In this section, we should like you to relate your answers specifically to the department running that course.

PLEASE LEAVE BLANK

1 - 4

Department ..... | 5 - 6 |

7

JJ J x xx ?

1.	A great deal of my time is taken up by time-tabled classes(lectures, practicals, tutorials, etc.)	4	3	1	0	2	8
2.	there is a real opportunity in this department for students to choose the particular areas they want to study.	4	3	1	0	2	9
3.	Lecturers here frequently give the impression that they haven't anything to learn from students.	4	3	1	0	2	10
4.	You usually have a clear idea of where you're going and what's expected of you in this department.	4	3	1	0	2	11
5.	A lot of the students in this department are friends of mine.	4	3	1	0	2	12
6.	The workload here is too heavy.	4	3	1	0	2	13
7.	Most of the staff here are receptive to suggestions from students for changes to their teaching methods.	4	3	1	0	2	14
8.	The courses in this department are geared to students' future employment.	4	3	1	0	2	15

		JJ	J	x	xx	?	
9.	You can learn nearly everything you need to know from the classes and lectures; it isn't necessary to do much further reading.	4	3	1	0	2	16
10.	The department really seems to encourage us to develop our own academic interests as far as possible.	4	3	1	0	2	17
11.	Most of the staff here seem to prepare their teaching very thoroughly.	4	3	1	0	2	18
12.	It's always easy here to know the standard of work expected of you.	4	3	1	0	2	19
13.	Students from this department often get together socially.	4	3	1	0	2	20
14.	It sometimes seems to me that the syllabus tries to cover too many topics.	4	3	1	0	2	21
15.	Staff here generally consult students before making decisions about how the courses are organised.	4	3	1	0	2	22
16.	Lecturers in this department are keen to point out that they are giving us a professional training.	4	3	1	0	2	23
17.	In this department you're expected to spend a lot of time studying on your own.	4	3	1	0	2	24
18.	We seem to be given a lot of choice here in the work we have to do.	4	3	1	0	2	25
19.	Lecturers in this department seem to be good at pitching their teaching at the right level for us.	4	3	1	0	2	26
20.	It's hard to know how well you're doing in the courses here.	4	3	1	0	2	27
21.	This department seems to foster a friendly climate which helps students to get to know each other.	4	3	1	0	2	28
22.	There is so much written work to be done that it is very difficult to get down to independent reading.	4	3	1	0	2	29
23.	Most of the lecturers here really try hard to get to know students.	4	3	1	0	2	30

		JJ	J	x	xx	?	
24.	The courses here seem to be pretty well determined by vocational requirements.	4	3	1	0	2	31
25.	Lectures in this department are basically a guide to reading.	4	3	1	0	2	32
26.	This department gives you a chance to use methods of study which suit your own way of learning.	4	3	1	0	2	33
27.	Staff here make a real effort to understand difficulties students may be having with their work.	4	3	1	0	2	34
28.	Lecturers here usually tell students exactly what they are supposed to be learning.	4	3	1	0	2	35
29.	This department organises meetings and talks which are usually well attended.	4	3	1	0	2	36
30.	There seems to be too much work to get through in the courses here.	4	3	1	0	2	37
31.	Lecturers in this department seem to go out of their way to be friendly towards students.	4	3	1	0	2	38
32.	The work I do here will definitely improve my future employment prospects.	4	3	1	0	2	39
33.	Lectures seem to be more important than tutorials or discussion groups in this department.	4	3	1	0	2	40
34.	Students have a great deal of choice over how they are going to learn in this department.	4	3	1	0	2	41
35.	The lecturers in this department always seem ready to give help and advice on approaches to studying.	4	3	1	0	2	42
36.	There's a lot of pressure on you as a student here.	4	3	1	0	2	43
37.	Students in this department frequently discuss their work with each other.	4	3	1	0	2	44
38.	Lecturers here generally make it clear right from the start what will be required of students.	4	3	1	0	2	45
39.	There seems to be considerable emphasis here on inculcating the 'right' professional attitudes.	4	3	1	0	2	46
40.	Lecturers in this department generally take students' ideas and interests seriously.	4	3	1	0	2	47

48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	2

We should like to thank you for sparing the time to fill in this rather long questionnaire. We recognise that it will have taken up a considerable amount of your time, but your responses will be valuable to us. If there are any aspects of studying we have not covered in the questionnaire, or any item you would like to comment on, please use the space below.

BENADERING TOT STUDIE

Werk asseblief die vraelys sorgvuldig dog vlugtig deur en gee onmiddellike reaksies op elke item. Afdeling A gaan oor agtergrondinligting. Afdeling B bevat stellings oor algemene benaderings tot studie en houding teenoor verskeie aspekte van u werk. Afdeling C hou verband met u ervarings van kursusse in een betrokke departement of vak.

Ons erken dat hierdie soort vraelys u nie die vryheid laat wat u moontlik graag wil hê om op 'n meer persoonlike en afgeronde wyse te reageer op party van die vrae wat gestel word nie. Ons het derhalwe aan die einde ruimte gelaat sodat u kommentaar kan byvoeg wat ons na u mening in ag behoort te neem.

AFDELING A **AGTERGRONDINLIGTING**

1. VAN .....

   VOORNAAM(E) .....

1 - 4

5

2. OUDERDOM(omsirkel asseblief die toepaslike kodenommer)

18 of jonger	1
19 - 21	2
22 - 24	3
25 - 34	4
35 of ouer	5

6

3. GESLAG(omsirkel asseblief die toepaslike kodenommer)

Manlik	1
Vroulik	2

7

4. Watter eksamen het u geslaag: die vir Kaapse Senior Sertifikaat of die van die Gesamentlike Matrikulasieraad?

Kaapse Senior Sertifikaat	1
GMR	2
Ander kwalifikasies	3

8

5. Skryf jou Senior Sertifikaat of GMR uitslae neer.
Bereken jou simbool-punt deur gebruik te maak van die volgende kode.
Gebruik die simbole van jou beste VYF vakke.

(A = 5, B = 4, C = 3, D = 2, E = 1)

	Simbool	Punt
Vak I	.....	.....
Vak II	.....	.....
Vak III	.....	.....
Vak IV	.....	.....
Vak V	.....	.....

Totaal

9 - 10

6. Watter Kurses neem jy?

Diploma	1	11
Hoër Diploma/ Diploma Tech	2	

7. Jaar van kurses. Moenie oorsese studietyd of ander onderbrekings in berekening bring nie.

Jaar	1	12
Jaar	2	
Jaar	3	
Jaar	4	
Jaar	5	

8. Aan watter EEN vak of hoofkurses spandeer jy die meeste tyd hierdie jaar?

Rekeningkunde	1	13 - 14
Kuns en Ontwerp	2	
Voedsel- en Kledingtegnologie	3	
Tale en Kommunikasie	4	
Bestuurswese	5	
Sekretariële Opleiding	6	
Onderwysersopleiding	7	
Argitektuur en Boukunde	8	
Siviele Ingenieurswese	9	
Elektrotegniese Ingenieurswese	10	
Meganiese Ingenieurswese	11	
Paramediese en Biologiese Wetenskappe	12	
Apteekwese	13	
Fisiese Wetenskappe en Wiskunde	14	
Ander(spesifiseer asseblief)		
.....		

9. Hoe goed vaar jy sover in hierdie vak/kurses in vergelyking met ander studente?	Swak	1	15
	Onder gemiddeld	2	
	Gemiddeld	3	
	Bo gemiddeld	4	
	Baie goed	5	

AFDELING B **BENADERING TOT STUDIE**

In hierdie afdeling wil ons graag hê u moet aandui of u met elkeen van die stellings in die lys hieronder saamstem of nie. Vir ons gaan dit hier om u benadering tot studie in die algemeen. Indien u vir verskillende vakke verskillende antwoorde sou verstrek, moet u egter u hoofkursus of -vak in gedagte hou wanneer u antwoord.

Trek asseblief 'n kring om die syfer langs elke stelling wat met u sienswyse die beste ooreenstem.

4 (✓✓) beteken Stem beslis saam

3 (✓) beteken Stem met voorbehoud saam

1 (x) beteken Verskil met voorbehoud

0 (xx) beteken Verskil beslis

2 (?) moet net gebruik word as die item nie op u betrekking het nie of as dit vir u onmoontlik is om 'n besliste antwoord te verstrek.

		✓✓	✓	x	xx	?	
1.	Ek vind dit moeilik om my studietyd doeltreffend te organiseer.	4	3	1	0	2	16
2.	Ek probeer waar moontlik idees in een vak met dié in ander vakke in verband bring.	4	3	1	0	2	17
3.	Hoewel ek 'n betreklik goeie algemene idee van heelwat sake het, is my kennis van die besonderhede betreklik swak.	4	3	1	0	2	18
4.	Ek hou van mededinging; ek vind dit prikkelend.	4	3	1	0	2	19
5.	Ek probeer gewoonlik die betekenis van die leeswerk wat van my geverg word behoorlik snap.	4	3	1	0	2	20
6.	Idees uit boeke lei my gedagtes dikwels ver in rigtings wat net-net nog verband hou met wat ek gelees het.	4	3	1	0	2	21
7.	Ek het my huidige kursusse hoofsaaklik gekies sodat ek hierna die kans het om 'n werklik goeie betrekking te bekom.	4	3	1	0	2	22

		JJ	J	x	xx	?	
8.	Die voorsetting van my studie is iets wat met my gebeur het eerder as iets wat ek werklik self gekies het.	4	3	1	0	2	23
9.	Ek hou daarvan as daar vir my gesê word presies wat om in skriftelike of ander werk-opdragte te doen.	4	3	1	0	2	24
10.	Ek vind dikwels dat ek sake wat ek in lesings hoor of in boeke lees, bevraagteken.	4	3	1	0	2	25
11.	Ek verkies oor die algemeen om die dele van 'n onderwerp of probleem agtereenvolgens aan te durf en afsonderlik uit te werk.	4	3	1	0	2	26
12.	Die voortdurende drukte van werk - werkop-dragte, keerdatums, en mededinging - laat my dikwels gespanne en teneergedruk.	4	3	1	0	2	27
13.	Ek vind dit moeilik om "oor te skakel" wanneer ek met 'n probleem besig is: ek verkies om elke gedagterigting, sover dit kan, deur te voer.	4	3	1	0	2	28
14.	My gewoonte om werk uit te stel, laat my met veels teveel om aan die einde van die kwartaal te doen.	4	3	1	0	2	29
15.	Dit is vir my belangrik om in die kursusse hier werklik goed te vaar.	4	3	1	0	2	30
16.	Dit lyk asof dosente behae daarin skep om die eenvoudige waarheid onnodig ingewikkeld te maak.	4	3	1	0	2	31
17.	Weens sake wat my aandag trek, is dit vir my moeilik om saans baie doeltreffende werk te doen.	4	3	1	0	2	32
18.	Wanneer ek 'n stuk werk doen, probeer ek in gedagte hou presies wat daardie betrokke dosent skynbaar verlang.	4	3	1	0	2	33
19.	Ek het gewoonlik nie die tyd om na te dink oor die implikasies van wat ek gelees het nie.	4	3	1	0	2	34
20.	Dosente laat soms deurskemer wat moontlik in die eksamen kan opduik; ek is dus op die uitkyk na moontlike wenke.	4	3	1	0	2	35
21.	Wanneer ek sukkel om 'n idee te verstaan, gee ek my verbeelding aanvanklik vrye teuels, selfs al bring dit my niks nader aan die oplossing nie.	4	3	1	0	2	36

		✓✓	✓	x	xx	?	
22.	Die hoofrede waarom ek hier is, is dat dit my sal help om 'n beter betrekking te bekom.	4	3	1	0	2	37
23.	Ek vind dikwels dat ek wonder of die werk wat ek hier doen werklik die moeite werd is.	4	3	1	0	2	38
24.	Ek werk oor die algemeen hard om wat aanvanklik moeilik lyk, te probeer verstaan.	4	3	1	0	2	39
25.	Ek verkies dat kursusse duidelik gestruktureer en fyn georganiseer moet wees.	4	3	1	0	2	40
26.	'n Swak eerste antwoord in 'n eksamen maak my paniekerig.	4	3	1	0	2	41
27.	Ek verkies deeglik beproefde benaderings tot probleme eerder as iets te avontuurliks.	4	3	1	0	2	42
28.	Ek is nogal traag om saans aan die werk te kom.	4	3	1	0	2	43
29.	Wanneer ek nuwe idees probeer verstaan, probeer ek dit dikwels in verband bring met situasies in die werklike lewe waarop dit betrekking het.	4	3	1	0	2	44
30.	Wanneer ek lees, probeer ek belangrike feite wat later nuttig te pas kan kom, memoriseer.	4	3	1	0	2	45
31.	Ek hou daarvan om my eie idees op die proef te stel, al rig ek nie veel daarmee uit nie.	4	3	1	0	2	46
32.	Ek kies oor die algemeen kursusse meer omdat dit by my loopbaan inpas, eerder as by my eie belangstellings.	4	3	1	0	2	47
33.	Ek is gewoonlik versigtig om nie gevolgtrekkings te maak nie, tensy dit deeglik deur die feite gestaaf word.	4	3	1	0	2	48
34.	Wanneer ek 'n nuwe onderwerp aanpak, stel ek dikwels vir my vrae daaroor, wat die nuwe inligting behoort te beantwoord.	4	3	1	0	2	49
35.	Ek veronderstel ek stel eerder belang in die kwalifikasies wat ek sal behaal as in die kursusse wat ek volg.	4	3	1	0	2	50
36.	Ek vind dikwels dat ek iets moet lees sonder dat ek die kans het om dit behoorlik te verstaan.	4	3	1	0	2	51

		✓✓	✓	x	xx	?	
37.	As omstandighede om te studeer vir my nie gunstig is nie, slaag ek oor die algemeen daarin om iets daaraan te doen.	4	3	1	0	2	52
38.	Wanneer ek oor praktiese werk verslag doen, hou ek daarvan om verskeie alternatiewe vertolkings van die bevindinge uit te werk.	4	3	1	0	2	53
39.	Die hoofrede waarom ek hier is, is dat ek meer kan leer oor die die vakke waarin ek werklik belang stel.	4	3	1	0	2	54
40.	As ek nuwe onderwerpe probeer verstaan, verduidelik ek dit dikwels aan my op wyses wat andere skynbaar nie kan volg nie.	4	3	1	0	2	55
41.	Ek vind ek moet daarop konsentreer om heelwat van wat ons moet leer, te memoriseer.	4	3	1	0	2	56
42.	Dit is vir my belangrik om as ek kan, beter as my vriende te vaar.	4	3	1	0	2	57
43.	Ek vind dit beter om dadelik met die besonderhede te begin en op dié wyse 'n geheelbeeld van 'n nuwe onderwerp te vorm.	4	3	1	0	2	58
44.	Dikwels as ek boeke lees, laat die idees lewendige indrukke wat soms 'n eie gestalte aanneem.	4	3	1	0	2	59
45.	Ek bekom op die een of ander wyse die boeke wat ek vir studie nodig het.	4	3	1	0	2	60
46.	Ek word dikwels gekritiseer omdat ek in my skriftelike of ander werkopdragte stof insluit wat nie ter sake is nie.	4	3	1	0	2	61
47.	Ek vind dat 'n studie van akademiese onderwerpe dikwels werklik opwindend en boeiend kan wees.	4	3	1	0	2	62
48.	Die beste manier waarop ek verstaan wat tegniese terme beteken, is om die leerboeke se omskrywings te onthou.	4	3	1	0	2	63
49.	Ek wil beslis die volgende reeks eksamens slaag, maar eintlik maak dit nie saak as ek net-net die paal haal nie.	4	3	1	0	2	64
50.	Ek het heelwat agtergrond leeswerk oor 'n onderwerp nodig voordat ek gereed is om my gedagtes op skrif te stel.	4	3	1	0	2	65

		√√	√	x	xx	?	
51.	Hoewel ek oor die algemeen feite en besonderhede onthou, vind ek dit moeilik om 'n geheelbeeld daaruit te vorm.	4	3	1	0	2	66
52.	Ek is geneig om buiten wat vir die afhandeling van werkopdragte vereis word weinig te lees.	4	3	1	0	2	67
53.	Dit is vir my 'n swaar toets as ek in tutoriale aan die woord gestel word.	4	3	1	0	2	68
54.	Vraagstukke en probleme boei my, veral as dit materiaal behels wat deurgewerk moet word om 'n logiese gevolgtrekking te maak.	4	3	1	0	2	69
55.	Ek bestee heelwat van my vrye tyd daaraan om meer uit te vind oor interessante onderwerpe wat in die klas bespreek is.	4	3	1	0	2	70
56.	Ek vind dit nuttig om 'n nuwe onderwerp uit te rafel om sodoende te sien hoe die idees in mekaar pas.	4	3	1	0	2	71
57.	Ek is skynbaar geneig om inderhaas gevolgtrekkings te maak sonder om te wag dat ek eers al die feite het.	4	3	1	0	2	72
58.	Ek haat om tou op te gooi, al gaan dit om onbenullighede.	4	3	1	0	2	73
59.	Ek dink dit is belangrik om probleme rasioneel en logies te beskou sonder om intuïtief op te tree.	4	3	1	0	2	74
60.	Ek vind ek is geneig om sake die beste te onthou as ek my stip op die volgorde waarin die dosent dit aangebied het.	4	3	1	0	2	75
61.	Wanneer ek 'n artikel of navorsingsverslag lees, gaan ek die feite oor die algemeen sorgvuldig na om te besluit of die gevolgtrekking geregverdig is.	4	3	1	0	2	76
62.	Dit lyk asof diegene wat onderrig gee, wil hê dat ek meer avontuurlik moet wees deur van my eie idees gebuik te maak.	4	3	1	0	2	77
63.	'n Terugblik laat my soms wonder waarom ek ooit besluit het om hierheen te kom.	4	3	1	0	2	78
64.	Ek vind akademiese onderwerpe so interessant dat ek na afloop van hierdie kursus graag daarmee wil voortgaan.	4	3	1	0	2	79

AFDELING C **ERVARINGS VAN U KURSUS**

In Afdeling A het ons u gevra aan watter enkele vak of hoofkursus u vanjaar die meeste tyd bestee. In hierdie afdeling wil ons graag hê dat u u antwoorde in verband moet bring met die bepaalde departement wat daardie kursus aanbied.

GELIEWE BLANKO TE LAAT

	1 - 4

Departement .....

	5 - 6
	7

		✓	✓	x	xx	?	
1.	Baie van my tyd word in beslag geneem deur klasse volgens die rooster(lesings, praktika, tutoriale, ens.)	4	3	1	0	2	8
2.	In hierdie departement het die studente die geleentheid om te kies watter betrokke gebiede hulle wil bestudeer.	4	3	1	0	2	9
3.	Dosente hier skep dikwels die indruk dat hulle niks van die studente kan leer nie.	4	3	1	0	2	10
4.	In hierdie departement het jy gewoonlik 'n duidelike idee van wat dit is waarop jy afstuur en wat van jou verwag word.	4	3	1	0	2	11
5.	Baie studente in hierdie departement is vriende van my.	4	3	1	0	2	12
6.	Die werklas hier is te swaar.	4	3	1	0	2	13
7.	Die meeste van die personeel hier is ontvanklik vir die studente se voorstelle aangaande veranderings in hulle onderrigmetodes.	4	3	1	0	2	14
8.	Die kursusse in hierdie departement is ingestel op die toekomstige indiensneming van die studente.	4	3	1	0	2	15

	//	✓	x	xx	?	
9. Jy kan feitlik alles wat jy moet ken uit die klasse en lesings te wete kom; dit is onnodig om enigsins wyer te lees.	4	3	1	0	2	16
10. Dit lyk werklik asof die departement ons aanmoedig om ons eie akademiese belangstellings sover moontlik te ontwikkel.	4	3	1	0	2	17
11. Dit lyk asof die meeste van die personeel hier hulle onderrig baie deeglik voorberei.	4	3	1	0	2	18
12. Hier is dit altyd maklik om te weet watter standaard werk van jou verwag word.	4	3	1	0	2	19
13. Studente van hierdie departement kom dikwels sosiaal byeen.	4	3	1	0	2	20
14. Dit lyk soms vir my asof die leerplan te veel onderwerpe probeer dek.	4	3	1	0	2	21
15. Die personeel hier raadpleeg die studente oor die algemeen voordat hulle besluit hoe kursusse georganiseer moet word.	4	3	1	0	2	22
16. Dosente in hierdie departement is gretig om daarop te wys dat hulle professionele opleiding aan ons verskaf.	4	3	1	0	2	23
17. In hierdie departement word daar van jou verwag om baie tyd aan selfstudie te bestee.	4	3	1	0	2	24
18. Dit lyk asof ons hier 'n groot keuse het aangaande die werk wat ons moet doen.	4	3	1	0	2	25
19. Dit lyk asof dosente in hierdie departement die vermoë het om hulle onderrig op die regte vlak vir ons af te stem.	4	3	1	0	2	26
20. Dit is moeilik om te weet hoe goed jy in die kursusse hier vaar.	4	3	1	0	2	27
21. Dit lyk asof hierdie departement 'n vriendelike klimaat skep, wat die studente help om mekaar te leer ken.	4	3	1	0	2	28
22. Daar moet soveel skriftelike werk verrig word dat dit baie moeilik is om by selfleeswerk uit te kom.	4	3	1	0	2	29
23. Die meeste van die dosente hier probeer werklik hard om die studente te leer ken.	4	3	1	0	2	30

		//	/	x	xx	?	
24.	Dit lyk asof die kursusse hier grotendeels deur loopbaanvereistes bepaal word.	4	3	1	0	2	31
25.	Die lesings in hierdie departement is basies 'n gids vir leeswerk.	4	3	1	0	2	32
26.	Hierdie departement gee jou 'n kans om studiemetodes te gebruik wat jou eie leerwyse pas.	4	3	1	0	2	33
27.	Die personeel wend 'n daadwerklike poging aan om te begryp watter probleme die studente met hulle werk ondervind.	4	3	1	0	2	34
28.	Die dosente hier sê gewoonlik aan die studente presies wat hulle veronderstel is om te leer.	4	3	1	0	2	35
29.	Die departement organiseer vergaderings en praatjies wat gewoonlik goed bygewoon word.	4	3	1	0	2	36
30.	Dit lyk asof daar te veel werk is om in die kursusse hier baas te raak.	4	3	1	0	2	37
31.	Dit lyk asof die dosente in hierdie departement die moeite doen om vriendelik teenoor die studente te wees.	4	3	1	0	2	38
32.	Die werk wat ek hier doen, sal my toekomstige werkvooruitsigte beslis verbeter.	4	3	1	0	2	39
33.	Dit lyk asof die lesings in hierdie departement belangriker as tutoriale of besprekingsgroepe is.	4	3	1	0	2	40
34.	Die studente beskik oor 'n wye keuse wat betref hoe hulle in hierdie departement gaan leer.	4	3	1	0	2	41
35.	Dit lyk asof die dosente in hierdie departement altyd bereid is om hulp met en raad oor benaderings tot studie te verleen.	4	3	1	0	2	42
36.	Daar is 'n groot mate van druk op jou as student hier.	4	3	1	0	2	43
37.	Die studente in hierdie departement bespreek dikwels hulle werk met mekaar.	4	3	1	0	2	44
38.	Die dosente hier maak dit oor die algemeen uit die staanspoor duidelik wat daar van die studente verlang word.	4	3	1	0	2	45
39.	Dit lyk asof daar hier aansienlike klem op die inskerping van die "regte" beroepshouding val.	4	3	1	0	2	46
40.	Die dosente in hierdie departement neem oor die algemeen die student se idees en belangstellings ernstig op.	4	3	1	0	2	47

48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	2

Ons wil u graag bedank dat u die tyd afgestaan het vir die invul van hierdie nogal lang vraelys. Ons is bewus daarvan dat dit 'n aansienlike hoeveelheid van u tyd in beslag moet geneem het, maar u reaksies sal vir ons waardevol wees. indien daar enige studie-aspekte is wat ons nie in die vraelys gedek het nie, of enige items waarop u graag kommentaar wil lewer, gebruik die ruimte hieronder daarvoor.

APPENDIX C

REVISION OF THE SUB-SCALE GROUPINGS OF THE APPROACHES TO STUDYING INVENTORY ON THE BASIS OF FACTOR ANALYSIS OF 103 ITEMS OF THE ASI AND CPQ FOR THE ENGLISH SAMPLE (n=1194)

COMPREHENSION LEARNING

ASI 31 (c1) I like to play around with ideas of my own even if they don't get me very far.

ASI 21 (c1) In trying to understand a puzzling idea, I let my imagination wander freely to begin with, even if I don't seem to be much nearer a solution.

ASI 6 (c1) Ideas in books often set me off on long chains of thought of my own, only tenuously related to what I was reading.

ASI 44 (c1) Often when I'm reading books, the ideas produce vivid images which sometimes take on a life of their own.

ASI 40 (g1) In trying to understand new topics, I often explain them to myself in ways that other people don't seem to follow.

DEEP APPROACH

ASI 10 (da) I often find myself questioning things I hear in lectures or read in books.

ASI 34 (da) When I'm tackling a new topic, I often ask myself questions about it which the new information should answer.

ASI 5 (da) I usually set out to understand thoroughly the meaning of what I am asked to read.

ASI 24 (da) I generally put a lot of effort into trying to understand things which initially seem difficult.

RELATING IDEAS

ASI 29 (ri) In trying to understand new ideas, I often try to relate them to real life situations to which they might apply.

ASI 2 (ri) I try to relate ideas in one subject to those in others, whenever possible.

ASI 50 (ri) I need to read around a subject pretty widely before I'm ready to put my ideas down on paper.

ASI 56 (ri) I find it helpful to 'map out' a new topic for myself by seeing how the ideas fit together.

USE OF EVIDENCE

ASI 60 (ue) When I'm reading an article or research report, I generally examine the evidence carefully to decide whether the conclusion is justified.

ASI 38 (ue) In reporting practical work, I like to try to work out several alternative ways of interpreting the findings.

ASI 30 (sa) When I'm reading I try to memorise important facts which may come in useful later.

STRATEGIC APPROACH

ASI 18 (st) When I'm doing a piece of work, I try to bear in mind exactly what that particular lecturer seems to want.

ASI 37 (st) If conditions aren't right for me to study, I generally manage to do something to change them.

ASI 20 (st) Lecturers sometimes give indications of what is likely to come up in exams, so I look out for what may be hints.

DISORGANISED STUDY METHODS

ASI 14 (ds) My habit of putting off work leaves me with far too much to do at the end of term.

ASI 28 (ds) I'm rather slow at starting work in the evenings.

ASI 1 (ds) I find it difficult to organise my study time effectively

ASI 17 (ds) Distractions make it difficult for me to do much effective work in the evenings.

OPERATION LEARNING

ASI 27 (ol) I prefer to follow well tried approaches to problems rather than anything too adventurous.

ASI 11 (ol) I generally prefer to tackle each part of a topic or problem in order, working out one at a time.

ASI 43 (ol) I find it better to start straight away with the details of a new topic and build up an overall picture that way.

ASI 48 (sa) The best way for me to understand what technical terms mean is to remember the text-book definition.

ASI 41 (sa) I find I have to concentrate on memorising a good deal of what we have to learn.

FEAR OF FAILURE

ASI 26 (ff) A poor first answer in an exam makes me panic.

ASI 12 (ff) The continual pressure of work - assignments, deadlines and competition - often makes me tense and depressed.

ASI 53 (ff) Having to speak in tutorials is quite an ordeal for me.

ASI 33 (ue) I am usually cautious in drawing conclusions unless they are well supported by evidence.

SYLLABUS-BOUNDNESS

ASI 9 (sb) I like to be told precisely what to do in essays or other assignments.

ASI 25 (sb) I prefer courses to be clearly structured and highly organised.

ASI 13 (ip) I find it difficult to "switch tracks" when working on a problem: I prefer to follow each line of thought as far as it will go.

ASI 59 (ip) I find I tend to remember things best if I concentrate on the order in which the lecturer presented them.

EXTRINSIC MOTIVATION

ASI 35 (em) I suppose I am more interested in the qualifications I'll get than in the courses I'm taking.

ASI 32 (em) I generally choose courses more from the way they fit in with career plans than from my own interests.

ASI 22 (em) My main reason for being here is that it will help me to get a better job.

ASI 7 (em) I chose my present courses mainly to give me a chance of a really good job afterwards.

ASI 39 (im) My main reason for being here is so that I can learn more about subjects which really interest me.
(scored negatively)

ASI 15 (am) It's important to me to do really well in the courses here.
(scored negatively)

INTRINSIC MOTIVATION

ASI 47 (im) I find that studying academic topics can often be really exciting and gripping.

ASI 63 (im) I find academic topics so interesting, I should like to continue with them after I finish this course.

ASI 55 (im) I spend a good deal of my spare time in finding out more about interesting topics which have been discussed in classes.

NEGATIVE ATTITUDES TO STUDYING

ASI 62 (na) When I look back, I sometimes wonder why I ever decided to come here.

ASI 49 (na) I certainly want to pass the next set of exams, but it doesn't really matter if I only just scrape through.

ASI 23 (na) Often I find myself wondering whether the work I am doing here is really worthwhile.

ASI 8 (na) Continuing my education was something which happened to me, rather than something I really wanted for myself.

ACHIEVEMENT MOTIVATION

ASI 4 (am) I enjoy competition: I find it stimulating.

ASI 42 (am) It is important to me to do things better than my friends, if I possibly can.

ASI 58 (am) I hate admitting defeat, even in trivial matters.

ASI 57 (gl) I seem to be a bit too ready to jump to conclusions without waiting for all the evidence.

ASI 45 (st) One way or another I manage to get hold of the books I need for studying.

GLOBETROTTING

ASI 3 (gl) Although I have a fairly good general idea of many things, my knowledge of the details is fairly weak.

ASI 19 (sa) I usually don't have time to think about the implications of what I have read.

IMPROVIDENCE

ASI 16 (sa) Lecturers seem to delight in making the simple truth unnecessarily complicated.

ASI 51 (ip) Although I generally remember facts and details, I find it difficult to fit them together into an overall picture.

ASI 46 (gl) I often get criticised for introducing irrelevant material into my essays or tutorials.

ASI 61 (ip) Tutors seem to want me to be more adventurous in making use of my own ideas.

UNPLACED ITEMS

ASI 36 (sa) Often I find I have to read things without having a chance to really understand them.

ASI 52 (sb) I tend to read very little beyond what's required for completing assignments.

ASI 54 (ue) Puzzles or problems fascinate me, particularly where you have to work through the material to reach a logical conclusion.

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